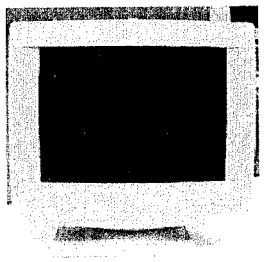
21" Auto scan Color Monitor

Chassis: CM5800

Service
Service
Service

21A582BH/00C



EPA POLLUTION PREVENTER

DDC/Audio/Power saving/Tilt correction

Service Manual

Horizontal frequencies
30 - 115 kHz

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REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

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PCS 98 560

PHILIPS

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.**

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

*** * Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.**

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

*** Broken Line ▬ ▪ ▬ ▪ ▬ ▪**

FOR PRODUCTS CONTAINING LASER :
DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
CAUTION- The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT,USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS,WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

Hex Data of DDC1/2B(107k)

****
ty107a.chk
****

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 1021
- ID Serial Number : 123456
- Week of Manufacture : 49
- Year of Manufacture : 1997

EDID Version, Revision
- Version : 1
- Revision : 1

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  without Blank-to-Black Setup
  Separate Sync
  Composite Sync
  Sync on Green
  no Serration required
- Maximum H Image Size : 38 cm
- Maximum V Image Size : 29 cm
- Display Transfer Characteristic (gamma): 2.800
- Feature Support (DPMS) : Standby
  Suspend
  Active Off
  RGB color display

Color Characteristics
- Red X coordinate : 0.625
- Red Y coordinate : 0.340
- Green X coordinate : 0.285
- Green Y coordinate : 0.605
- Blue X coordinate : 0.150
- Blue Y coordinate : 0.065
- White X coordinate : 0.281
- White Y coordinate : 0.311

Established Timings
- Established Timings I : 640 x 480 @60Hz (VGA,IBM)
  640 x 480 @75Hz (VESA)
- Established timings II : 800 x 600 @75Hz (VESA)
  1024 x 768 @75Hz (VESA)
  1280 x 1024 @75Hz (VESA)
- Manufacturer's timings : 1152 x 870 @75Hz (MacII,Apple)

Standard Timing Identification #1
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 85

Standard Timing Identification #2
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 85

Standard Timing Identification #3
- Horizontal active pixels : 1280
- Aspect Ratio : 5:4
- Refresh Rate : 85

Detailed Timing #1
- Pixel Clock (MHz) : 25.170
- H Active (pixels) : 640
- H Blanking (pixels) : 160
- V Active (lines) : 400
- V Blanking (lines) : 49
- H Sync Offset (F Porch) (pixels): 16
- H Sync Pulse Width (pixels) : 96
- V Sync Offset (F Porch) (lines): 12
- V Sync Pulse Width (lines) : 2
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 8
- V Border (lines) : 7
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Negative H Sync

Detailed Timing #2
- Pixel Clock (MHz) : 108.000
- H Active (pixels) : 1152
- H Blanking (pixels) : 352
- V Active (lines) : 900
- V Blanking (lines) : 43
- H Sync Offset (F Porch) (pixels): 16
- H Sync Pulse Width (pixels) : 64
- V Sync Offset (F Porch) (lines): 2
- V Sync Pulse Width (lines) : 8
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Positive H Sync

Detailed Timing #3
- Pixel Clock (MHz) : 229.500
- H Active (pixels) : 1600
- H Blanking (pixels) : 560
- V Active (lines) : 1200
- V Blanking (lines) : 50
- H Sync Offset (F Porch) (pixels): 64
- H Sync Pulse Width (pixels) : 192
- V Sync Offset (F Porch) (lines): 1
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Positive H Sync

Detailed Timing #4
- Pixel Clock (MHz) : 256.140
- H Active (pixels) : 1800
- H Blanking (pixels) : 629
- V Active (lines) : 1350
- V Blanking (lines) : 56
- H Sync Offset (F Porch) (pixels): 133
- H Sync Pulse Width (pixels) : 192
- V Sync Offset (F Porch) (lines): 7
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Positive H Sync

Extension Flag : 0

Check sum : 74(hex)

Hex Data of DDC1/2B(107k)

For Hitachi CRT

0: 0	1: ff	2: ff	3: ff	4: ff	5: ff	6: ff	7: 0
8: 41	9: c	10: 21	11: 10	12: 40	13: e2	14: 1	15: 0
16: 31	17: 7	18: 1	19: 1	20: e	21: 26	22: 1d	23: b4
24: e8	25: 0	26: b2	27: a0	28: 57	29: 49	30: 9b	31: 26
32: 10	33: 48	34: 4f	35: 24	36: 43	37: 80	38: 45	39: 59
40: 61	41: 59	42: 81	43: 99	44: 1	45: 1	46: 1	47: 1
48: 1	49: 1	50: 1	51: 1	52: 1	53: 1	54: d5	55: 9
56: 80	57: a0	58: 20	59: 90	60: 31	61: 10	62: 10	63: 60
64: c2	65: 0	66: 7c	67: 1d	68: 11	69: 8	70: 7	71: 1c
72: 30	73: 2a	74: 80	75: 60	76: 41	77: 84	78: 2b	79: 30
80: 10	81: 40	82: 28	83: 0	84: 7c	85: 1d	86: 11	87: 0
88: 0	89: 1e	90: a6	91: 59	92: 40	93: 30	94: 62	95: b0
96: 32	97: 40	98: 40	99: c0	100: 13	101: 0	102: 7c	103: 1d
104: 11	105: 0	106: 0	107: 1e	108: e	109: 64	110: 8	111: 75
112: 72	113: 46	114: 38	115: 50	116: 85	117: c0	118: 73	119: 0
120: 7c	121: 1d	122: 11	123: 0	124: 0	125: 1e	126: 0	127: 74

Hex Data of DDC1/2B(115k)

****
ty115new.chk
****

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 1121
- ID Serial Number : 123456
- Week of Manufacture : 49
- Year of Manufacture : 1997

EDID Version, Revision
- Version : 1
- Revision : 1

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  without Blank-to-Black Setup
  Separate Sync
  Composite Sync
  Sync on Green
  no Serration required
- Maximum H Image Size : 38 cm
- Maximum V Image Size : 29 cm
- Display Transfer Characteristic (gamma): 2.800
- Feature Support (DPMS) : Standby
  Suspend
  Active Off
  RGB color display

Color Characteristics
- Red X coordinate : 0.625
- Red Y coordinate : 0.340
- Green X coordinate : 0.285
- Green Y coordinate : 0.605
- Blue X coordinate : 0.150
- Blue Y coordinate : 0.065
- White X coordinate : 0.281
- White Y coordinate : 0.311

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  1024 x 768 @75Hz (VESA)
  1280 x 1024 @75Hz (VESA)
- Manufacturer's timings : 1152 x 870 @75Hz (MacII,Apple)

Standard Timing Identification #1
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 85

Standard Timing Identification #2
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 85

Standard Timing Identification #3
- Horizontal active pixels : 1280
- Aspect Ratio : 5:4
- Refresh Rate : 85

Standard Timing Identification #4
- Horizontal active pixels : 1600
- Aspect Ratio : 4:3
- Refresh Rate : 85

Detailed Timing #1
- Pixel Clock (MHz) : 25.170
- H Active (pixels) : 640
- H Blanking (pixels) : 160
- V Active (lines) : 400
- V Blanking (lines) : 49
- H Sync Offset (F Porch) (pixels): 16
- H Sync Pulse Width (pixels) : 96
- V Sync Offset (F Porch) (lines): 12
- V Sync Pulse Width (lines) : 2
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 8
- V Border (lines) : 7
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Negative H Sync

Detailed Timing #2
- Pixel Clock (MHz) : 108.000
- H Active (pixels) : 1152
- H Blanking (pixels) : 352
- V Active (lines) : 900
- V Blanking (lines) : 43
- H Sync Offset (F Porch) (pixels): 16
- H Sync Pulse Width (pixels) : 64
- V Sync Offset (F Porch) (lines): 2
- V Sync Pulse Width (lines) : 8
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Positive H Sync

Detailed Timing #3
- Pixel Clock (MHz) : 243.230
- H Active (pixels) : 1600
- H Blanking (pixels) : 562
- V Active (lines) : 1200
- V Blanking (lines) : 50
- H Sync Offset (F Porch) (pixels): 66
- H Sync Pulse Width (pixels) : 192
- V Sync Offset (F Porch) (lines): 1
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Positive H Sync

Detailed Timing #4
- Pixel Clock (MHz) : 256.140
- H Active (pixels) : 1800
- H Blanking (pixels) : 629
- V Active (lines) : 1350
- V Blanking (lines) : 56
- H Sync Offset (F Porch) (pixels): 133
- H Sync Pulse Width (pixels) : 192
- V Sync Offset (F Porch) (lines): 7
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 380
- V Image Size (mm) : 285
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  Normal Display, No stereo
  Digital Seperate Sync
  Positive V Sync
  Positive H Sync

Extension Flag 0

Check sum c(hex)

Hex Data of DDC1/2B (FOR 115K)

For Hitachi CRT

0: 0	1: f f	2: ff	3: f f	4: f f	5: f f	6: f f	7: 0
8: 41	9: c	10: 21	11: 11	12: 40	13: e2	14: 1	15: 0
16: 31	17: 7	18: 1	19: 1	20: e	21: 26	22: 1d	23: b4
24: e8	25: 0	26: b2	27: a0	28: 57	29: 49	30: 9b	31: 26
32: 10	33: 48	34: 4f	35: 24	36: 43	37: 80	38: 45	39: 59
40: 61	41: 59	42: 81	43: 99	44: a9	45: 59	46: 1	47: 1
48: 1	49: 1	50: 1	51: 1	52: 1	53: 1	54: d5	55: 9
56: 80	57: a0	58: 20	59: 90	60: 31	61: 10	62: 10	63: 60
64: c2	65: 0	66: 7c	67: 1d	68: 11	69: 8	70: 7	71: 1c
72: 30	73: 2a	74: 80	75: 60	76: 41	77: 84	78: 2b	79: 30
80: 10	81: 40	82: 28	83: 0	84: 7c	85: 1d	86: 11	87: 0
88: 0	89: 1e	90: 3	91: 5f	92: 40	93: 32	94: 62	95: b0
96: 32	97: 40	98: 42	99: c0	100: 13	101: 0	102: 7c	103: 1d
104: 11	105: 0	106: 0	107: 1e	108: e	109: 64	110: 8	111: 75
112: 72	113: 46	114: 38	115: 50	116: 85	117: c0	118: 73	119: 0
120: 7c	121: 1d	122: 11	123: 0	124: 0	125: 1e	126: 0	127: c

Warning and Notes

Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol ⚠ .

2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approximately 30 seconds).

3. **ESD**
   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

6. It is recommended that saferty goggles be worn when replacing the picture tube.

7. When making adjustments,use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.

8. Never replace modules or other components while the unit is switched on.

9. Together with the defleciton unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.

10. After repair, the wiring should be fastened in place with the cable clamps.

Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
   - Mode : 1024 * 768 (56.5kHz / 70Hz)
   - Signal pattern : grey scale
   - Adjust brightness and contrast control for the mechanical mid-position (click position)

2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

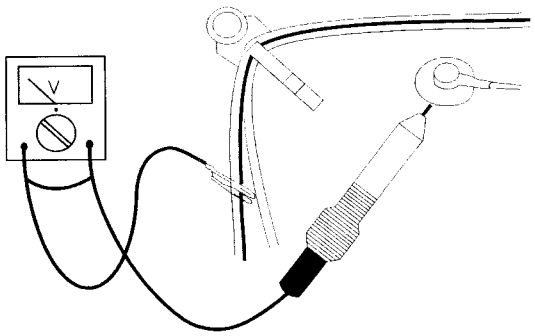


Fig.1

Electrical Adjustments

0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 115kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 21046 (GPT-1600).

0.1 This monitor has 14 factory-preset modes as below.

640 x 400 31.5 kHz/70 Hz	1152 x 870 68.7 kHz/75 Hz
640 x 480 31.5 kHz/60 Hz	1152 x 900 71.8KHz/76Hz
640 x 480 37.5 kHz/75 Hz	1280 x 1024 80.0 kHz/75 Hz
800 x 600 46.9 KHz/75Hz	1280 x 1024 91.1 kHz/85Hz
800 x 600 53.7 kHz/85Hz	1600 x 1200 106.25 kHz/85 Hz
1024 x 768 60.0 kHz/75 Hz	1800 x 1350 105.45kHz/75Hz
1024 x 768 68.7 kHz/85 Hz	1600 x 1200 112.5kHz/90Hz

0.2 With normal VGA card:
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.3 AC/DC Measurement:
The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale". Power input: 110V AC

1. B+ supply voltage (3194) 210Vdc

- Apply a video signal in the 1024 x 768 with 69 kHz/85Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Pre-set trimming potentiometer 3194(+) and 3644(EHT) in mid-position.
- Set Vg2 (screen) to fully Counter-clockwise (zero beamcurrent).
- Connect a dc voltmeter between the joint of capacitor 2181 and ground (common ground).
- Set the B+ trimming potentiometer 3194 so that the reading on the dc voltmeter is 210 V +/- 0.5 Vdc.

2. High-voltage EHT (3644)

- Apply a video signal in the 1024 * 768 with 69 kHz/85Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Turn off the power.
- Connect a "high-voltage voltmeter" between the high-voltage connection of the picture tube and earth.
- Turn on the power.
- Set the EHT trimming potentiometer 3644 so that the "high-voltage voltmeter" reads 26.8 kV +/- 0.2 kV (for 21").

- Turn off the power.
- Remove the "high-voltage voltmeter" from the picture tube.
- Turn on the power again.
- Remove the "high-voltage voltmeter" from the picture tube.
- Turn on the power again.

3. Monitor the following auxiliary voltages.

+ 12.0V SOURCE ACROSS C2192 + 12.0V +/- 0.5VDC.
+ 15.0V SOURCE ACROSS C2187 + 15.0V +/- 1.0VDC.
- 15.0V SOURCE ACROSS C2189 - 15.0 V+/- 1.0VDC.
+ 6.3 V SOURCE ACROSS D6195"-" 6.3V +/- 0.5VDC.
+145.0V SOURCE ACROSS C2182 +145.0V +/- 2.0VDC.
+210.0V SOURCE ACROSS C2181 + 210.0V +/- 1.5VDC.
+ 81.0V SOURCE ACROSS C2185 + 81.0 V +/- 2.0VDC.

4. General conditions for alignment

4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.
4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.
4.3 Purity, geometry and subsequent alignments should be carried out in with correct magnetic field.

Northern hemisphere : H=0, V=430 mG, Z=0
Southern hemisphere : H=0, V=-520 mG, Z=0
Equatorial Support : H=0, V=0 mG, Z=0

4.4 All voltages are to be measured or applied with respect to ground.
Note: Do not use heatsink as ground.
4.5 Adjust function controls " " to center position except for contrast control which should be set to MAX.
4.6 Apply a video signal in the 1024 x 768 with 69kHz/85Hz mode, select cross hatch pattern, set the Brightness for visible raster, adjust H-size for 380mm (21" monotor)
"raster width", adjust R3551 for Horizontal raster center.

5. To access factory mode:

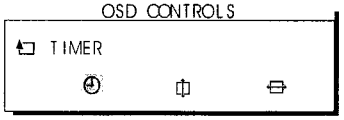
- Turn off monitor (don't turn off PC)
- Press " " and " " simultaneously on the front control panel , untill the OSD menu with characters " factory mode (below OSD menu)" come on the screen of monitor.
- Highlighting on factory mode,then enter,that aglintou display on screen, 2nd procedure must carried out from aglintou to aglintof.
- If OSD menu disappears on the screen of monitor, press " " again (anytime), then the OSD menu comes on the screen again.
- using " " : to select OSD menu.
: to increase or decrease the setting.

(Please also refer to page 4,5,6 and 7 for OSD adjustment)
- Using " " to confirm the selection.

5.1. To leave factory mode

* After alignment of factory mode,Select EXIT mode then turn off monitor (if you do not select EXIT mode then turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu is always at factory mode.

6. OSD CONTROLS (During alignment)
During alignment, please use the "OSD controls" to keep OSD menu, or to shift OSD menu as below.



TIMER Set OSD display time, **select "OFF", then the OSD menu will stay on the screen (won't disappear).**
VERTICAL POSITION Move the OSD windows up or down.
HORIZONTAL POSITION Move the OSD window left or right.

Electrical Adjustments (Continued)

7. Alignment of Vg2 cut-off point, white tracking (OSD control)

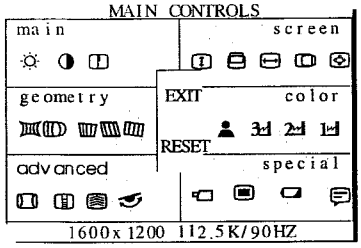
Equipment : 1. Video Test Generator-801GC (Quantum Data)
2. Color-analyzer (Minolta CA-100)

VG2 [(screen), at the bottom of the L.O.T.].
* Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode, select the "full white pattern".
* Use color-analyzer (Minolta CA-100) to adjust cutoff and white uniformity.

OSD R/G/B cut-off and R/G/B gain can be accessed, with initial data:
R cutoff = 30%, R gain = 70%
G cutoff = 30%, G gain = 70%
B cutoff = 30%, B gain = 70%

Step 1: To select the character "FACTORY MODE" as shown in Fig. 2.1, press " ▣ " to access the OSD menu for R/G/B gain & cutoff as shown in Fig. 2.2.
Step 2: Use " ☼ " to increase or decrease the value as shown in Fig. 2.3.

Fig. 2.1
MAIN CONTROLS



FACTORY MODE

Fig. 2.2
FACTORY MODE

	GAIN	CUTOFF	
9300K	R G B	R G B	SUB
6500K	R G B	R G B	SUB
5500K	R G B	R G B	SUB
FULL-SIZE :	H	V	
LINEARITY :	H	V	V-BAL
EXIT ALIGNTOF			

FACTORY MODE

	GAIN	CUTOFF	
9300K	R G B	R G B	SUB
6500K	R G B	R G B	SUB
5500K	R G B	R G B	SUB
FULL-SIZE :	H	V	
LINEARITY :	H	V	V-BAL
EXIT ALIGNTOF			63%

Fig. 2.3

7.1 Connect the video input, set brightness control at 50% and contrast at minimum position, Vg2 at Minimum (counter clockwise, and ABL (3647, potentiometer) at center position. Slowly increase Vg2 voltage until light output is at 0.17Ft-L +/- 0.05Ft-L (Y=0.17Ft-L, on the screen of CA-100) .
7.2 (The screen of monitor is dark now)
: Press " ▣ " to show the OSD menu as shown in Fig. 2.1.
: Select the character "FACTORY MODE" to access the R/G/B adjustment as shown in Fig. 2.2 and Fig. 2.3.
: Adjust the cutoff of R/G/B to get 9300K (x=0.281 +/- 0.015, y=0.311 +/- 0.015), and brightness output at 0.17 +/- 0.05 Ft-L (Y=0.17Ft-L).
7.3 : Press " ◑ " to set contrast at maximum (100%).
: Adjust gain of R/G/B to get 9300K (x=0.281 +/- 0.015, y=0.311 +/-0.015, don't care about the Y value)

7.4 Apply a small white square 60 x 60 mm pattern, or 8% fill of full screen, brightness set to center (50%), and contrast at maximum (100%), adjust sub-contrast. control (OSD) to reach 32 +/- 2 Ft-L.

7.5 : Select the 6500K colour temperature as shown in Fig. 2.2.
: Adjust the R/G/B cutoff and R/G/B gain as shown in procedure 7.2~7.4 to get R/G/B cutoff x= 0.313 +/- 0.015
y= 0.329 +/- 0.015
Y= 0.17 +/- 0.05 Ft-L
R/G/B gain x= 0.313 +/- 0.015
y= 0.329 +/- 0.015
Y= 28 +/- 2 Ft-L

7.6 : Select the 5500K colour temperature as shown in Fig. 2.2.
: Adjust the R/G/B cutoff & R/G/B gain as procedure 7.2~7.4

to get R/G/B cutoff x= 0.332 +/- 0.015
y= 0.347 +/- 0.015
Y= 0.17 +/- 0.05 Ft-L
R/G/B gain x= 0.332 +/- 0.015
y= 0.347 +/- 0.015
Y= 25 +/- 2 Ft-L

7.7 Apply full white pattern at 9300K, adjust ABL R3647 to reach 32 +/- 2 Ft-L (21")(contrast at maximum, brightness at maxiaum).

8. Picture geometry setting (factory pre-set modes)

- Apply a video signal with cross-hatch pattern.
- Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode.
- Set brightness and contrast controls to their center positions (OSD control).

8.1 Horizontal geometry (OSD control)
- Adjust the H-width to 380 mm (for 21" monitor).
-Adjust the H-phase to center position.

8.2 Vertical geometry (OSD control)
- Adjust vertical size to 285 mm (for 21" monitor).
- Adjust V-phase to center position.

8.3 Trapezoid distortion (OSD control)
- Adjust the trapezoid to get optimal vertical lines.

8.4 Pincushion (OSD control)
- Adjust the pincushion to get optimal vertical line.

8.5 Parallelogram (OSD control)
- Adjust parallelogram so that vertical lines are vertical or symmetrically about the center vertical axis.

8.6 Unbalance-pin (OSD control)
- Adjust the unbalance-pin so that that vertical border lines are aligned symmetrically.

8.7 Rotation (OSD control)
- Adjust picture so that vertical tilt is less than +/- 0.5mm.

8.8 Store the preset results by selecting the "exit" (OSD control).

8.9 Repeat the procedure 8.1 to 8.8 until all the preset timings have been adjusted completely

9. Focus adjustment

: Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode.
: Select " @ " pattern.
: Set the brightness at center (50%) and the contrast at maximum (100%).
: Adjust focus potentiometers (top of L.O.T.) Focus 1 for horizontal focus and Focus 2 for vertical focus so that the picture at 2/3 of the diagonal lines (from center to four corners) of the displayed screen is as sharp as possible.

10. Loading DDC code

The DDC HEX data should be written into the DDC IC (7331) by EEPROM writer or equivalent method.

a: Service DDC Kit
DDC Module (DDC cable), Part number = 4822 320 12004
DDCV2N.EXE software (3.5" disk), Part number = 4822 711 00024
b: Please refer to Service information 4822 727 21995 for using the Service DDC Kit.

USB Connections

If you have Windows '95...

follow these steps to complete setting up your monitor.

1. Start Windows '95 and install CD ROM supplied with this monitor.
2. Click on the "START" icon. Next, click on the"SETTINGS" icon. Then click on "CONTROL PANEL."
3. Double-click on "DISPLAY" icon. Next, click on "SETTINGS" tab.Then click on "ADVANCED PROPERTIES"dialog box.
4. Click on "MONITOR" tab.

5.(a) If you have an old computer, click on"CHANGE" dialog box. Next,"SELECT DEVICE" screen appears. Now click on " HAVE DISK" dialog box. and select CD-ROM drive

Or

5.(b) If you have a new compter,"SELECT DEVICE" screen automatically appears. Click on " HAVE DISK" dialog box and select CD-ROM drive.

6. Select"OK" in the " INSTALL FROM DISK" dialog box. If model name of the Philips monitor is correct, click "OK" tab in the " SELECT DEVICE" dialog box.
7. Click " CLOSE "tab in the " ADVANCED PROPERTIES" dialog box. If your Windows'95 version is different or you need more detailed installation information, please refer to the windows '95 user's manual. **For additional information on the monitor, please refer to the owner's manual.**

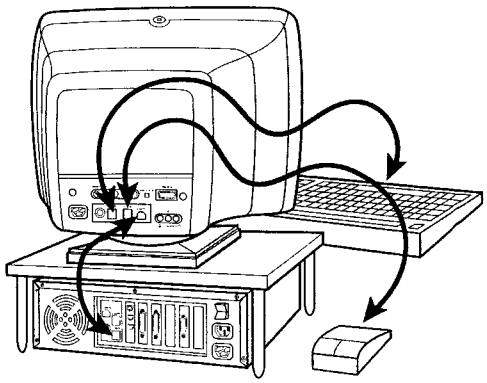
USB CONNECTIONS

USB (Universal Serial Bus) is an innovation in connecting your IBM- compatible computer to your monitor.By using the USB, you will be able to connect your keyboard, mouse,printer, and other peripherals to your monitor instead of having to connect them to your computer. This will give you greater flexibility in setting up your system.Plus, you will have true plug-and-play capability. While the software is still being developed,Philips has included the hardware so you will be ready to take advantage of this next generation in computer development.

For an IBM-compatible Computer:

1. Turn off the computer.
2. Connect the (optional) USB Hub and cable to the computer and to the monitor. (Computer must have USB port.)
3. Connect the power cable.
4. Turn on the monitor. Then turn on the computer.
5. With the installation of the correct software,you will be able to connect specially-made peripherals to the monitor.

Note : USB Hub and cables sold separately.USB Bay exists in back of monitor.



Use the information file (philips.inf) for Windows'95

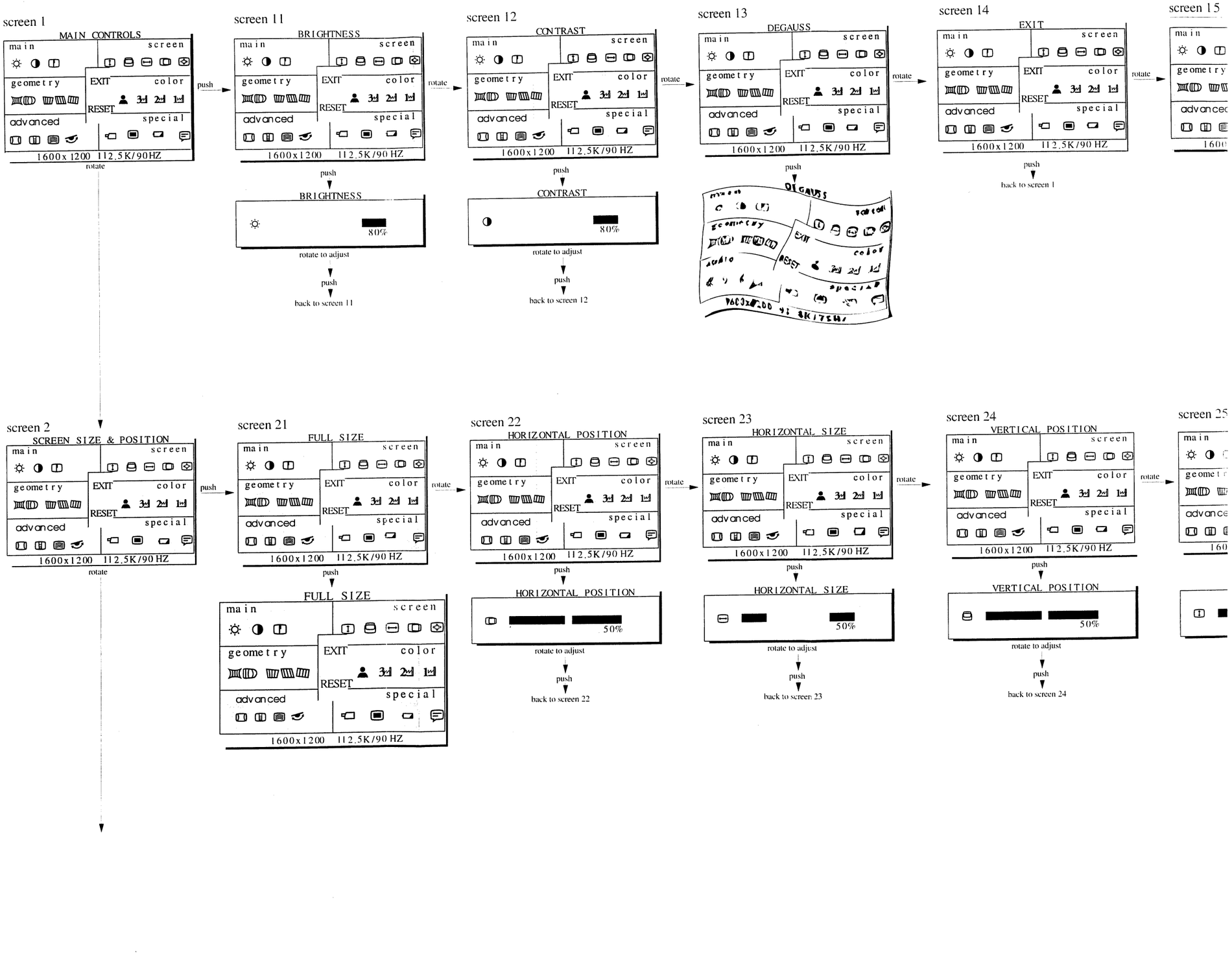
(Philips Monitors-Driver Disk)

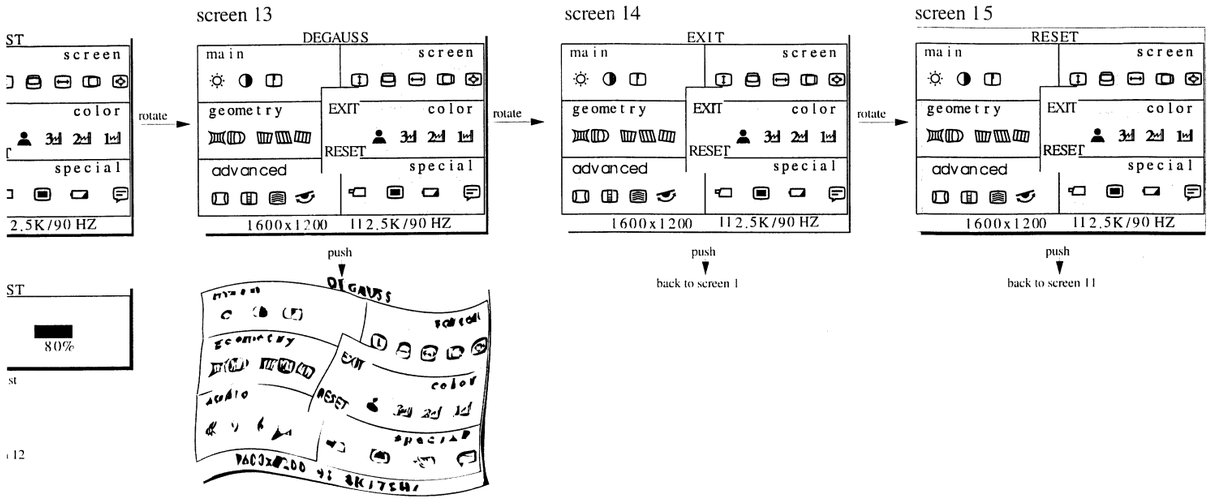
Philips' monitors build in VESA DDC1/2B feature to support Plug & Play requirement for Windows'95. You can install this information file (philips.inf) in order to select your Philips monitor from'Monitor' dialog box in Windows 95 to activate Plug & Play application. The installation procedure based on Windows '95 OEM Release 2 is specified as follows,

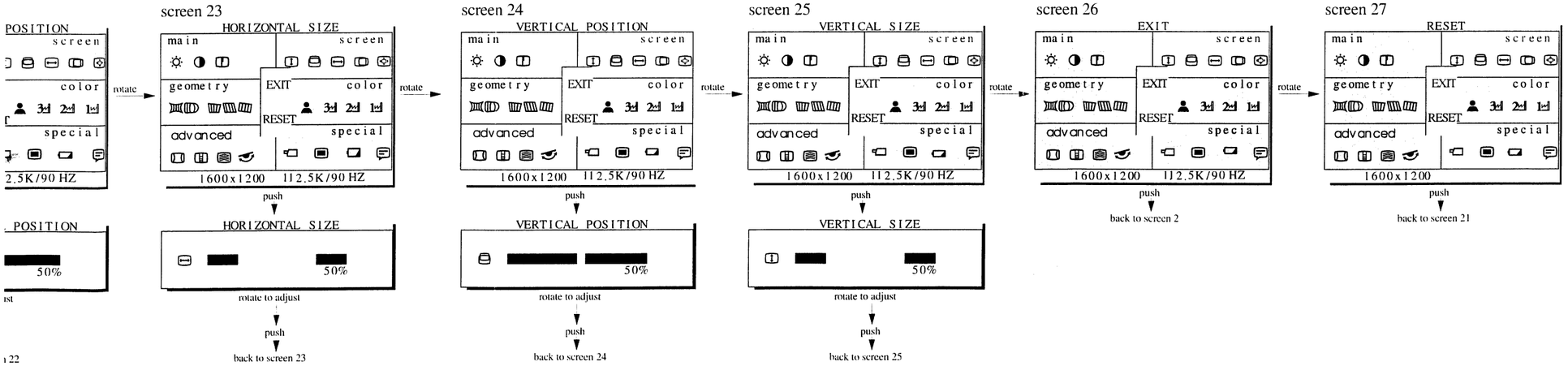
1. Start Windows'95
2. Click the'Start' button, point to'Settings', and then click'Control Panel'
3. Double-click the 'Display' icon, select the 'Settings' tab, then select "Advanced Properties"tab.
4. Select"Ok" in the "Install From Disk"dialog box.
5. Now, you can see the Philips monitor is appeared.
6. If the model name of Philips monitor is correct, click"Ok" tab in "Select Device" dialog box.
7. Then, click"Close" tab in "Advanced Properties"dialog box.
8. Now, you can select"Refresh Rate" to change monitor resolution

If your Windows'95 version is different or you need more detail installation information, please refer to Windows 95 user's manual.

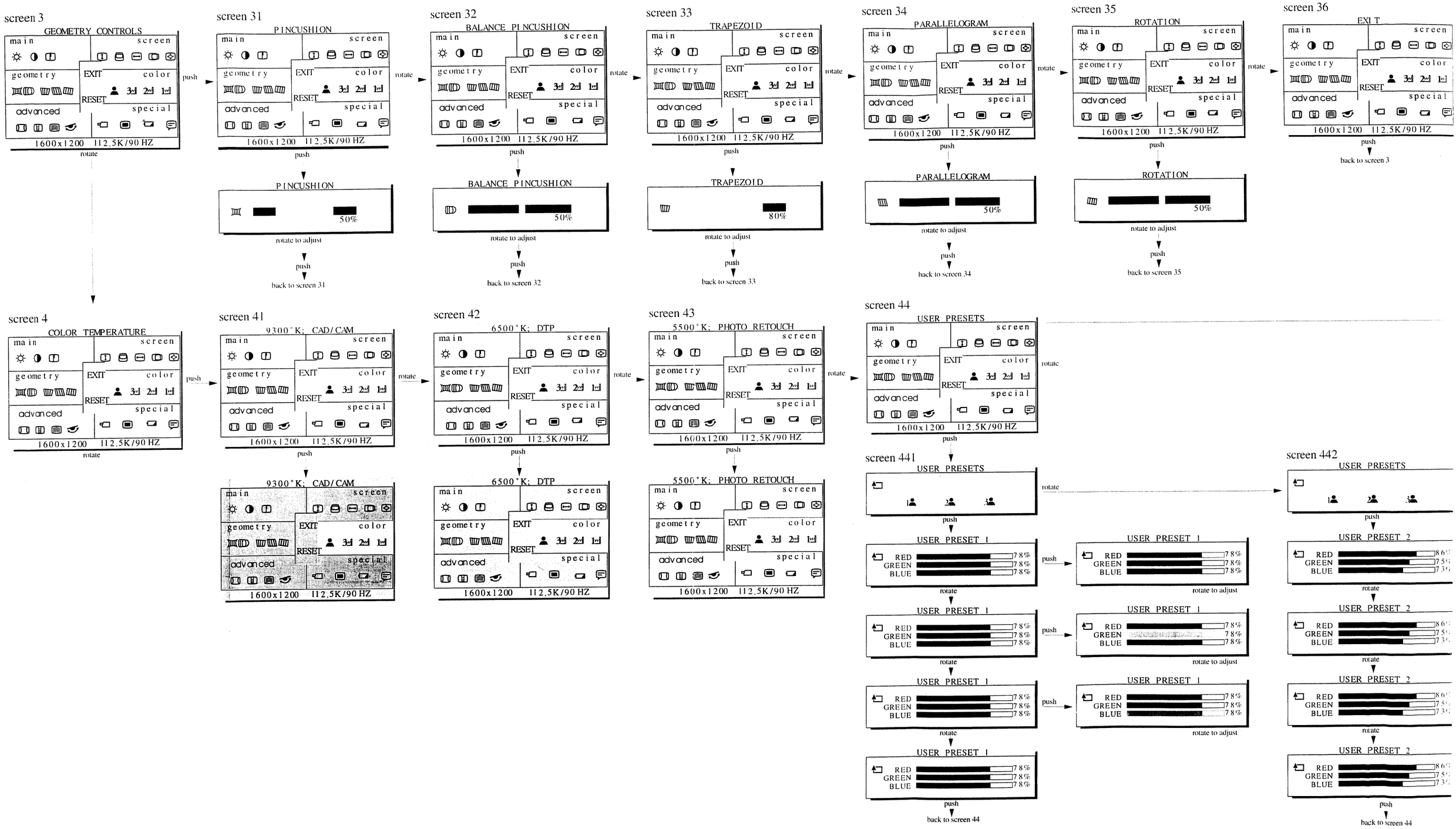
Quick Reference for OSD Adjustment



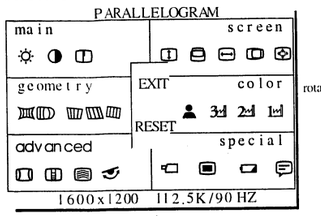

screen 13
screen 14
screen 15
DEGAUSS
EXIT
RESET
main
screen
geometry
color
advanced
special
rotate
1600x1200
112.5K/90 HZ
push
back to screen 1
back to screen 11
80%


screen 23
screen 24
screen 25
screen 26
screen 27
HORIZONTAL SIZE
VERTICAL POSITION
VERTICAL SIZE
EXIT
RESET
main
screen
geometry
color
advanced
special
rotate
1600x1200
112.5K/90 HZ
push
50%
rotate to adjust
back to screen 23
back to screen 24
back to screen 25
back to screen 2
back to screen 21

Quick Reference for OSD Adjustment (Continued)

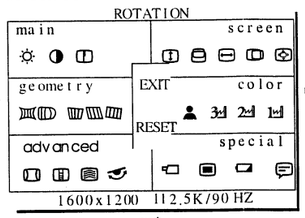


screen 34



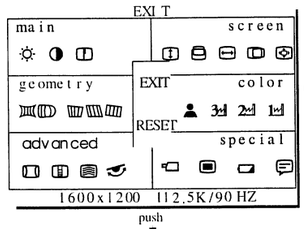
rotate

screen 35



rotate

screen 36

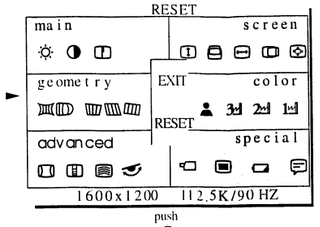


push

back to screen 3

rotate

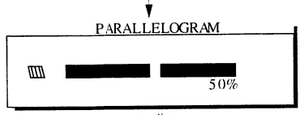
screen 37



push

back to screen 31

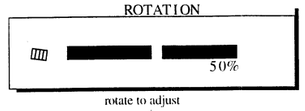
push



rotate to adjust

push

back to screen 34

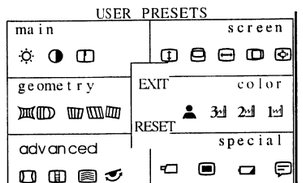


rotate to adjust

push

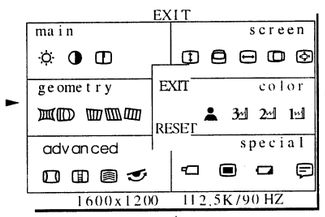
back to screen 35

screen 44



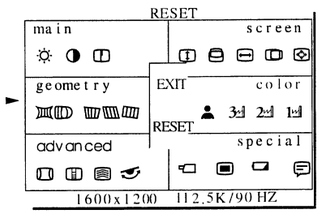
rotate

screen 45



rotate

screen 46



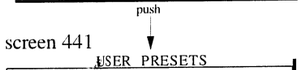
push

back to screen 4

push

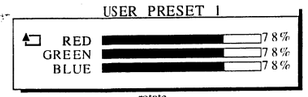
back to screen 41

screen 441



push

rotate



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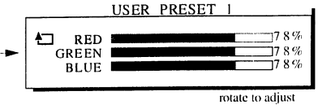
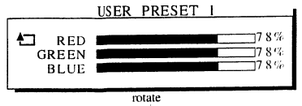


rotate to adjust

rotate



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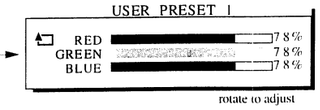
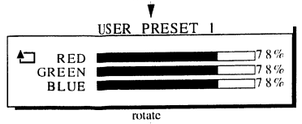


rotate to adjust

rotate



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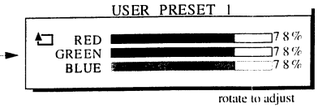

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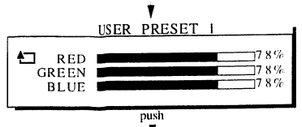
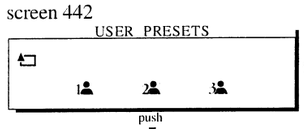


push

back to screen 44

screen 442



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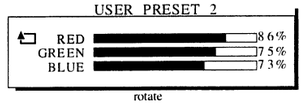

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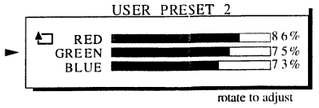

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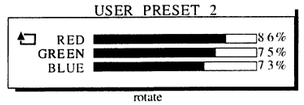
rotate



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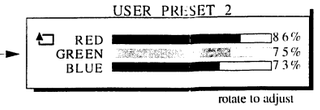

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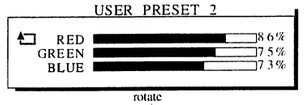
rotate



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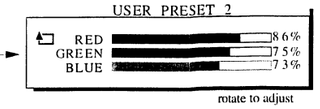
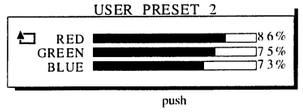


rotate to adjust

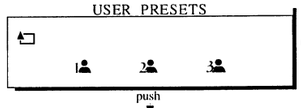
rotate



push

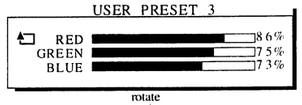
back to screen 44

screen 443



push

rotate



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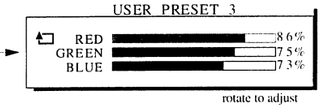

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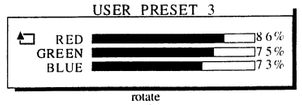
rotate



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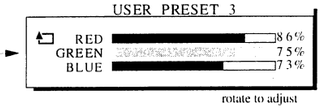
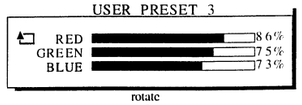


rotate to adjust

rotate



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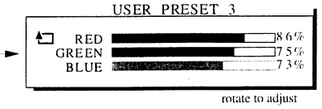
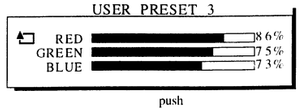


rotate to adjust

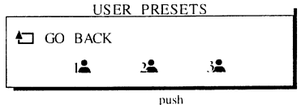
rotate



push

back to screen 44

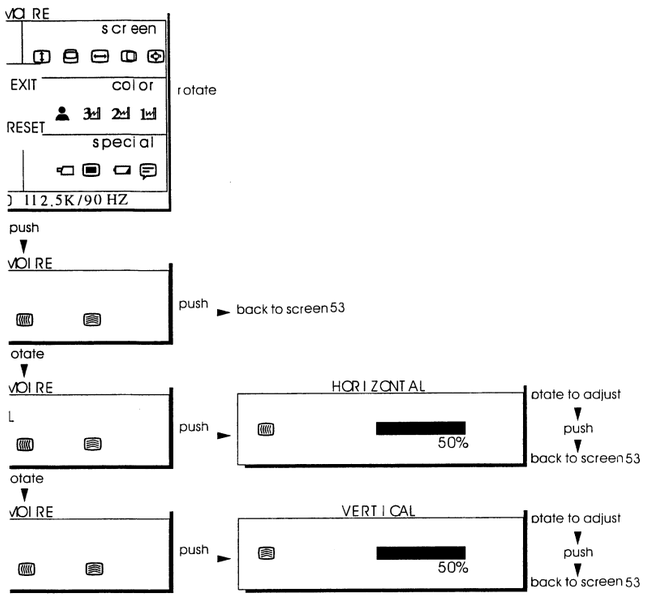
screen 444

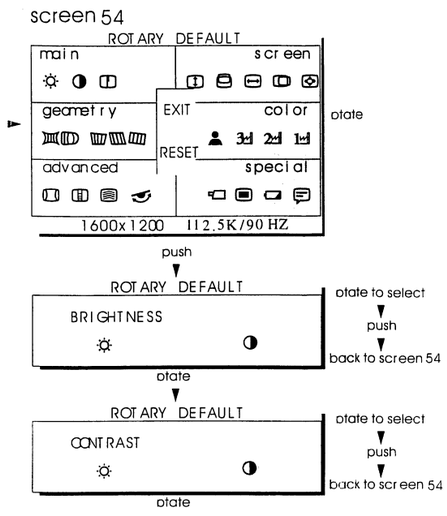


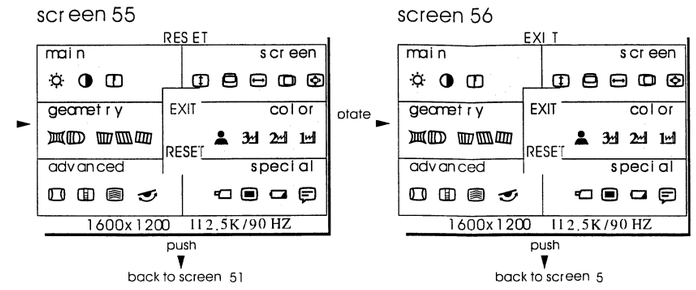
push

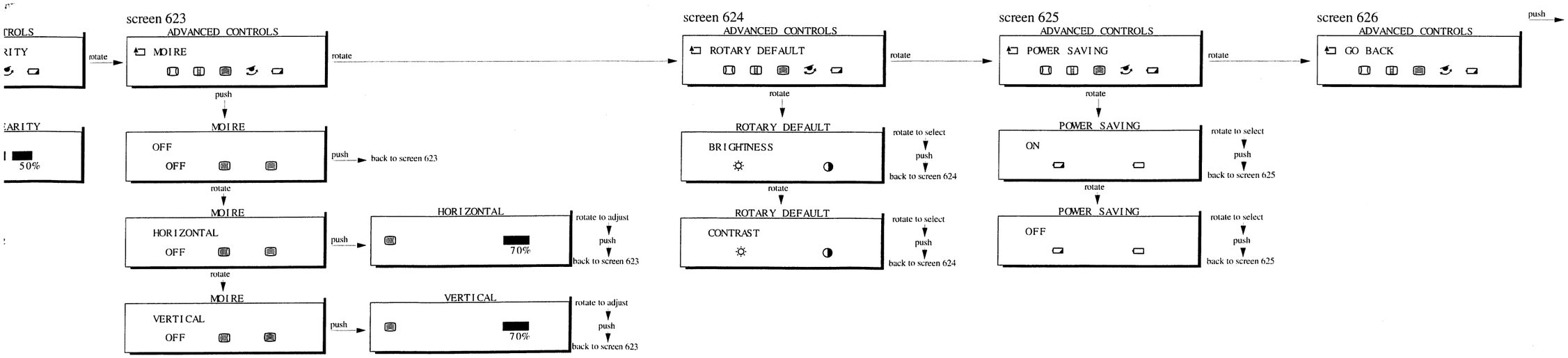
back to screen 44

ıued)

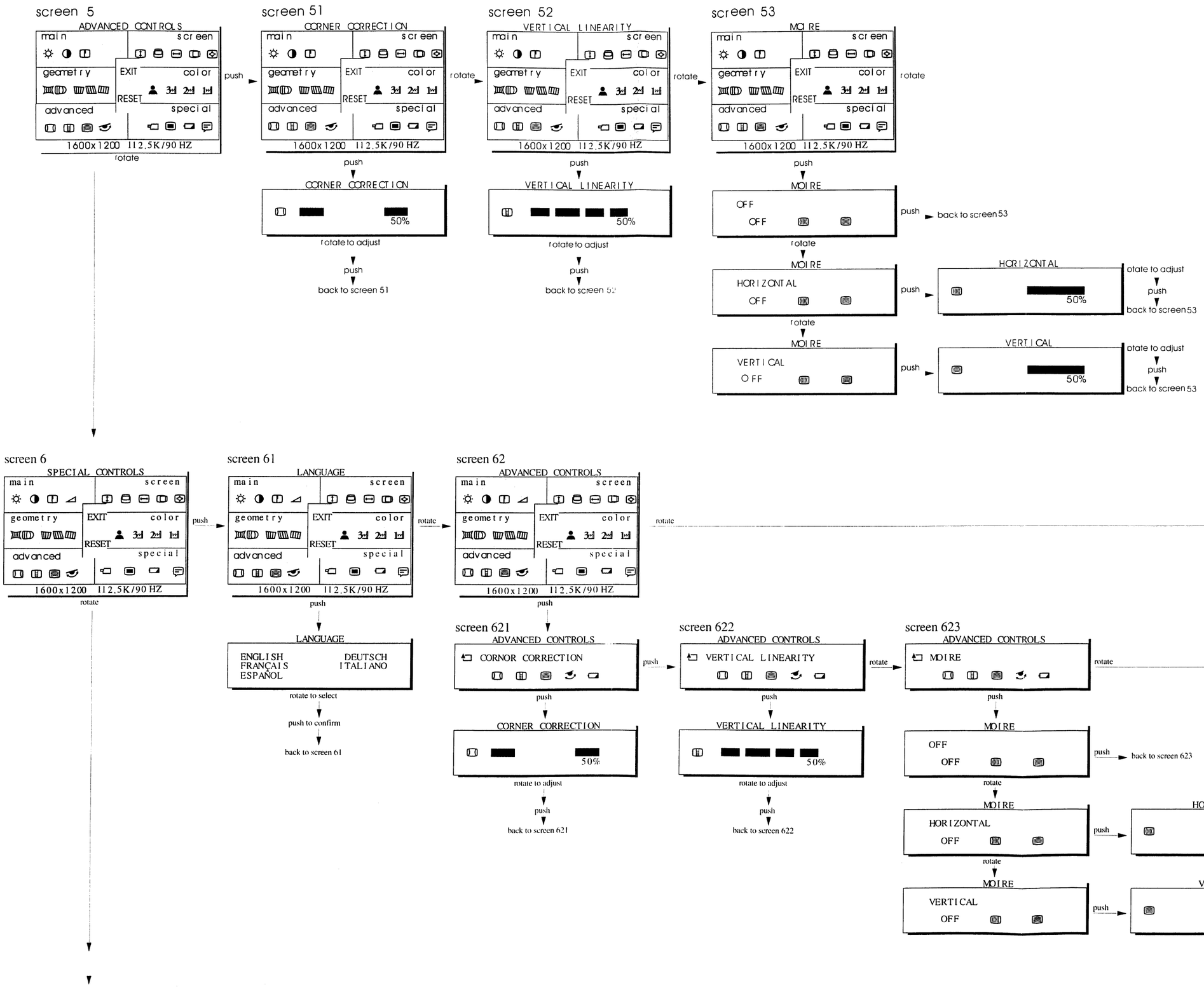

VOIRE
screen
EXIT
color
RESET
special
112.5K/90 HZ
rotate
push
VOIRE
push
back to screen 53
otate
VOIRE
L
push
HORIZONTAL
50%
otate to adjust
push
back to screen 53
otate
VOIRE
push
VERTICAL
50%
otate to adjust
push
back to screen 53


screen 54
ROTARY DEFAULT
main
screen
geometry
EXIT
color
RESET
advanced
special
1600x1200 112.5K/90 HZ
otate
push
ROTARY DEFAULT
BRIGHTNESS
otate to select
push
back to screen 54
otate
ROTARY DEFAULT
CONTRAST
otate to select
push
back to screen 54
otate

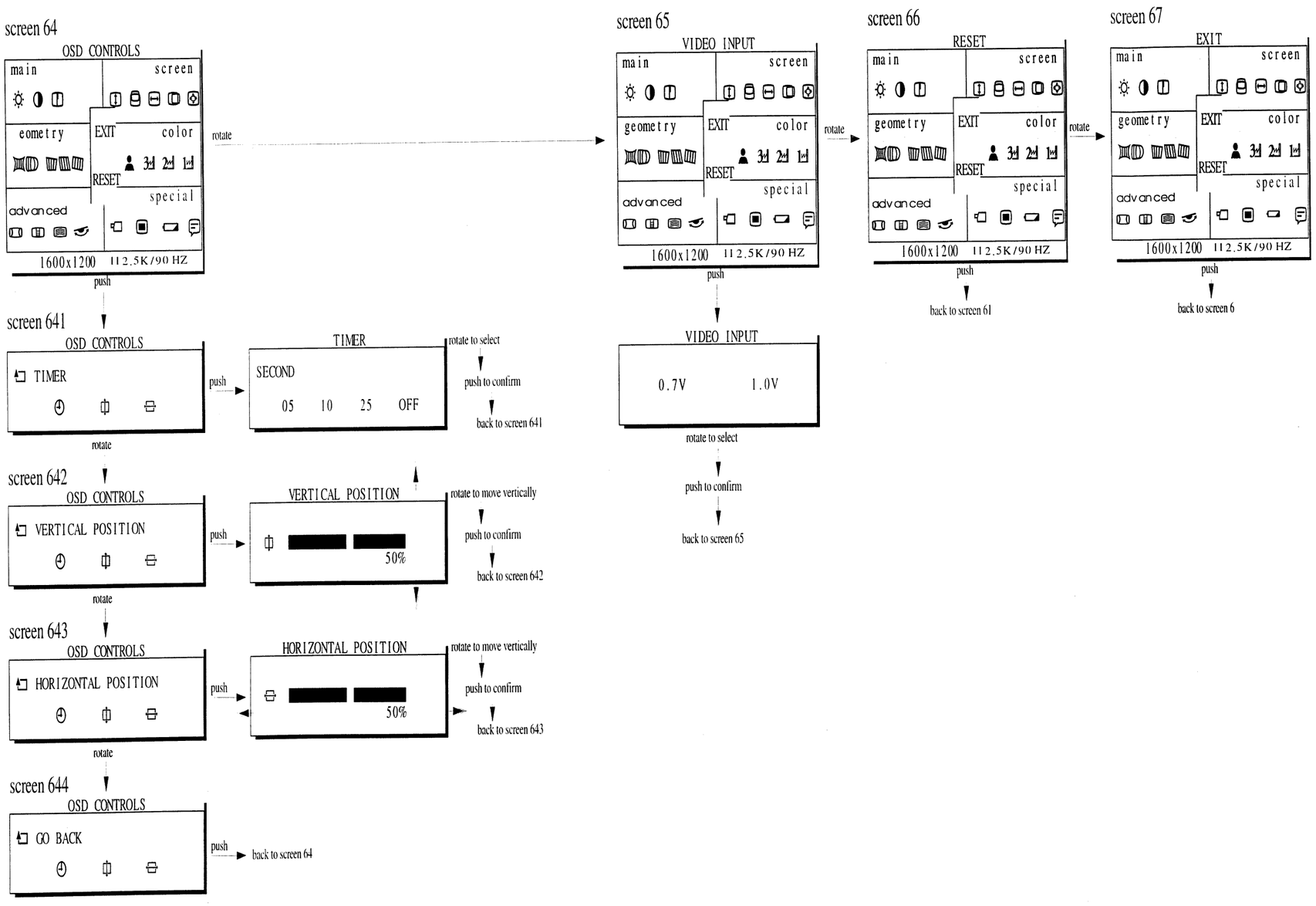

screen 55
RESET
main
screen
geometry
EXIT
color
RESET
advanced
special
1600x1200 112.5K/90 HZ
otate
push
back to screen 51
screen 56
EXIT
main
screen
geometry
EXIT
color
RESET
advanced
special
1600x1200 112.5K/90 HZ
push
back to screen 5

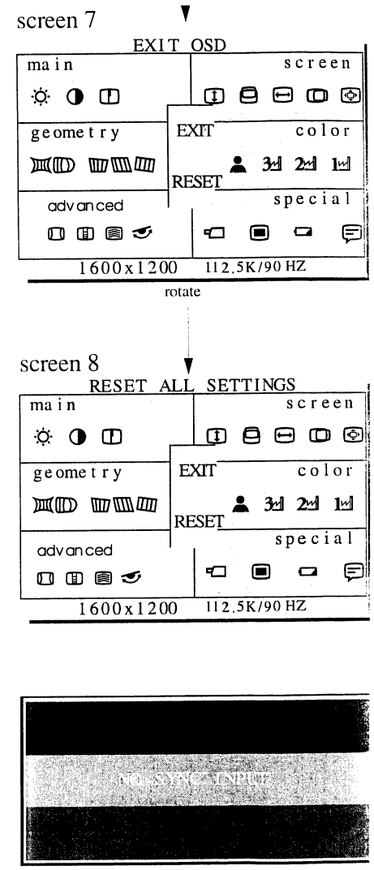

TROLS
RITY
rotate
EARITY
50%
screen 623
ADVANCED CONTROLS
MOIRE
push
MOIRE
OFF
OFF
push
back to screen 623
rotate
MOIRE
HORIZONTAL
OFF
push
HORIZONTAL
70%
rotate to adjust
push
back to screen 623
rotate
MOIRE
VERTICAL
OFF
push
VERTICAL
70%
rotate to adjust
push
back to screen 623
rotate
screen 624
ADVANCED CONTROLS
ROTARY DEFAULT
rotate
ROTARY DEFAULT
BRIGHTNESS
rotate to select
push
back to screen 624
rotate
ROTARY DEFAULT
CONTRAST
rotate to select
push
back to screen 624
rotate
screen 625
ADVANCED CONTROLS
POWER SAVING
rotate
POWER SAVING
ON
rotate to select
push
back to screen 625
rotate
POWER SAVING
OFF
rotate to select
push
back to screen 625
rotate
screen 626
ADVANCED CONTROLS
GO BACK
push

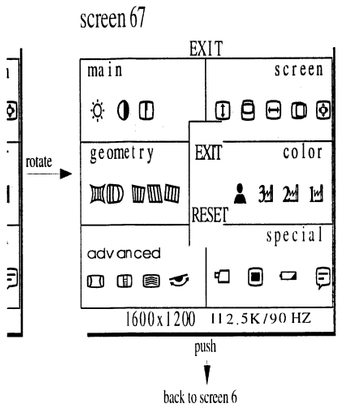
Quick Reference for OSD Adjustment (Continued)

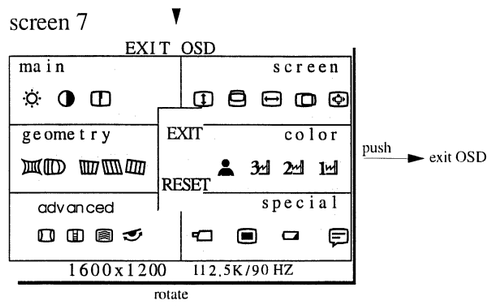


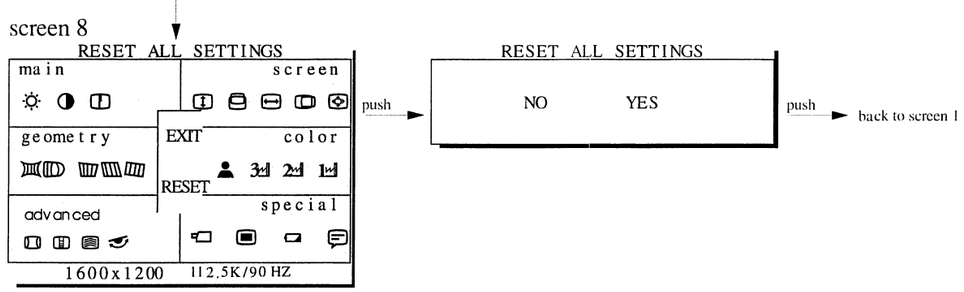
Quick Reference for OSD Adjustment (Continued)

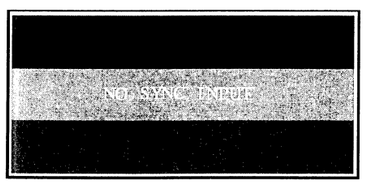




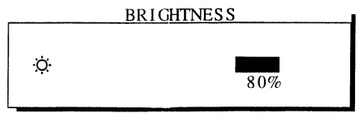


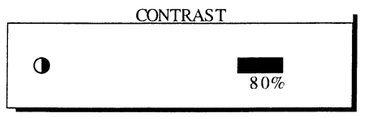






"When rotary default setting selected"





Mechanical Adjustments

0. Location of the panel
0.1 Main panel (1156)
0.2 Video panel (1157)
0.3 Terminal panel (1159)
0.4 USB panel (1160) - optional
0.5 Encoder panel (1162)
0.6 Power switch panel (1163)

1. General
To be able to perform measurements and repairs on the circuit boards, the monitor should placed in **Service Position (Fig. 3.1)** first:

How to remove the back cover of monitor :

There are 4 screws [2 screws are at the rear of the monitor, the other two screws are on the bottom of the monitor] to fix the front cabinet and back cover of the monitor.

Step 1: Remove the "cable cover" as shown in Fig. 3.2.
Step 2: Remove 2 screws (rear view) as shown in Fig. 3.3.
Step 3: Turn the set to remove the other 2 screws, as shown in Fig. 3.4 .
Step 4: Turn the set to its original position.
Step 5: Remove back cover (* There are two "plastic clips" on the "front cabinet" to hold the "rear cover" as shown in Fig. 3.5).

Chassis :

After removing the back cover, you can see the inside the monitor with metal frame and metal shield.
- Remove 26 screws for service position as Fig. 3.6 to Fig. 3.15.

Video panel :
- After removing the metal frames, remove the metal shielding on rear side of Video panel for measurement.

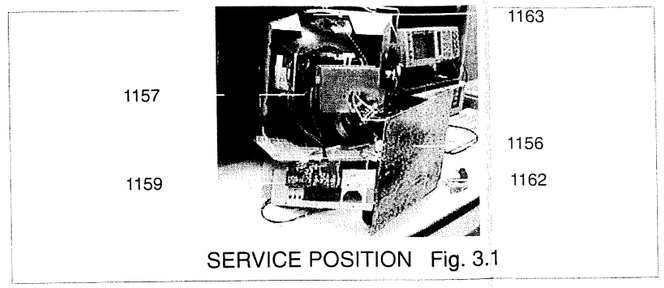
Main panel :

After removing the metal frames,
- Disconnect "Video panel"
- Disconnect EHT cable (EHT cap)
- Disconnect 4 pin connector "M1501" (wire of YOKE, on Main panel)
- Disconnect 2 pin connector "M1114" (degaussing coil, on Main panel)
- Disconnect 1 pin connector "M1701" (on Video panel)
- Disconnect 2 pin connector "M1219" (on Main panel)
- Disconnect 9 pin connector "M1217" (on Main panel)
- Disconnect 3 pin connector "M1213" (on Main panel)
- Disconnect 3 pin connector "M1504" (on Main panel)
- Disconnect 2 pin connector "M1218" (on Main panel)
- Disconnect 2 pin connector "M1220" (on Main panel)
- Disconnect 7 pin connector "M1212" (on Main panel)

- To slide out Main panel.
- Remove 2 screws as shown in Fig. 3.14, then push the clips to the right as shown in Fig. 3.13, to separate the bottom plate.
- Remove the plastic frame as shown in Fig. 3.15.
- Remove the "Rotary panel" "Earphone panel" from Front cabinet and place it on the table as shown in Fig.3.1.
- Connect all the connectors and panels for service position.

Service position :
Place monitor in service position as shown in Fig. 3.1 through Fig. 3.15.

2. Repair instructions
After the service position is obtained, all the panel's copper trace sides may be accessed.



SERVICE POSITION Fig. 3.1

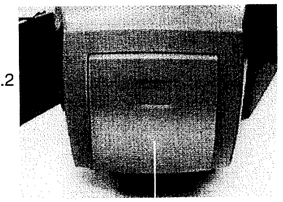
Fig. 3.2

cable cover

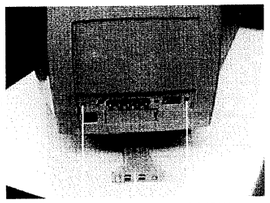
Fig. 3.3

screw usb module screw
screw

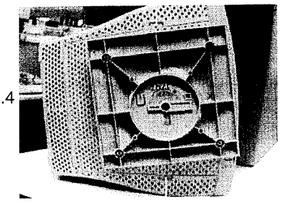
Fig. 3.4

screw
screws

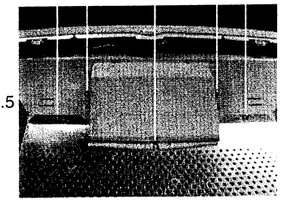
Fig. 3.5

screws

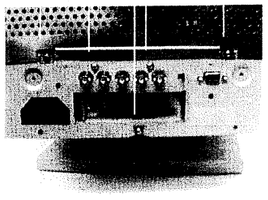
Fig. 3.6


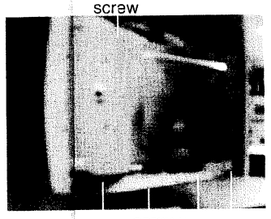
Fig. 3.7

screw
screws

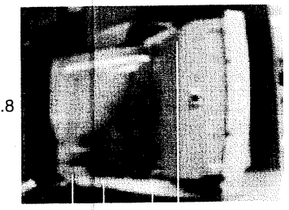
Fig. 3.8

screws

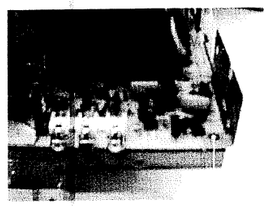
Fig. 3.9

screw

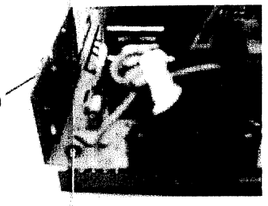
Fig. 3.10

screw

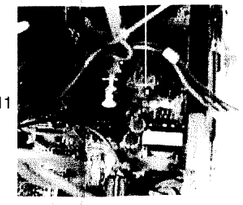
Fig. 3.11


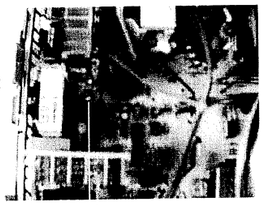
Fig. 3.12

screw

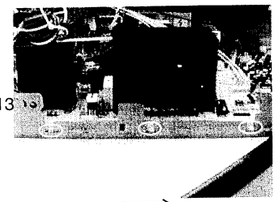
Fig. 3.13

push

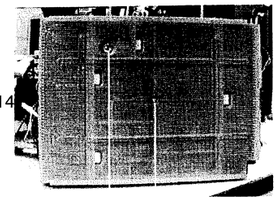
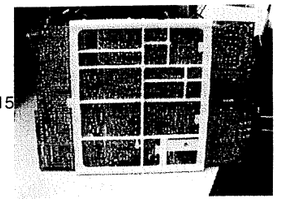
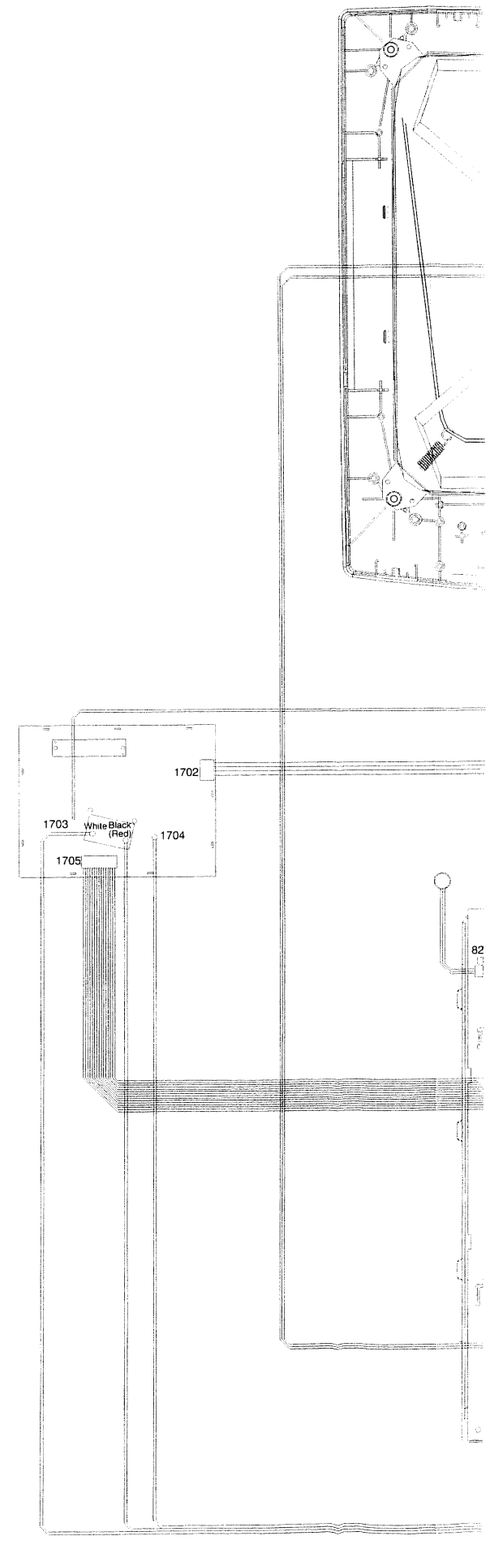
Fig. 3.14

screws

Fig. 3.15

push the plastic frame, then remove it

Wiring diagr



Wiring diagram

SITION Fig. 3.1

Fig. 3.7

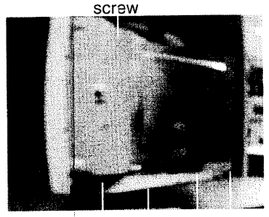


Fig. 3.8

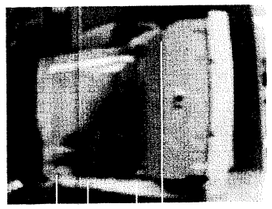


Fig. 3.9

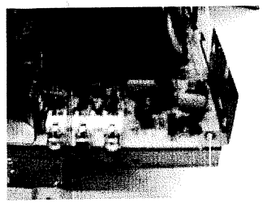


Fig. 3.10

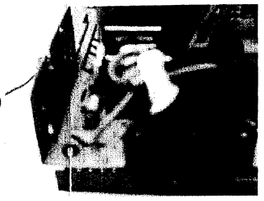


Fig. 3.11

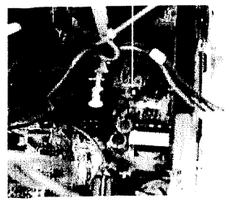


Fig. 3.12

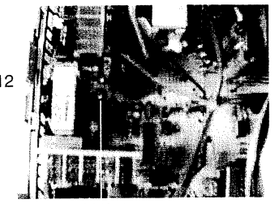


Fig. 3.13

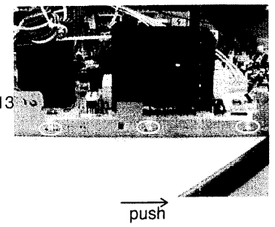


Fig. 3.14

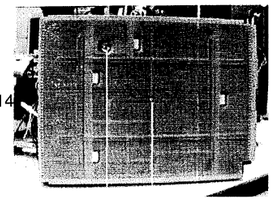
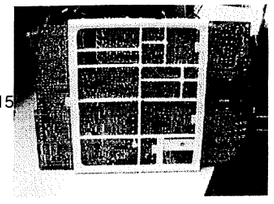
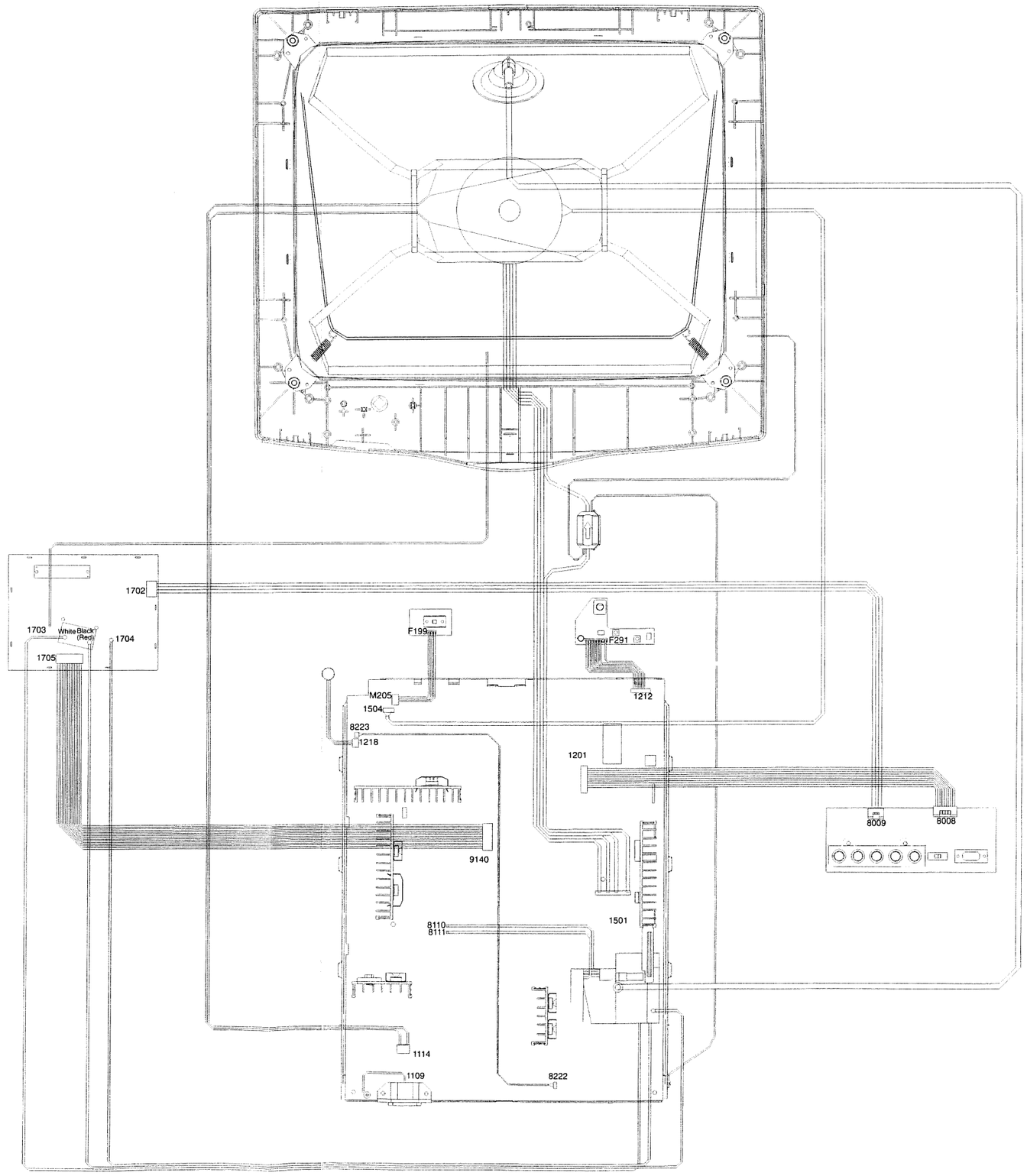
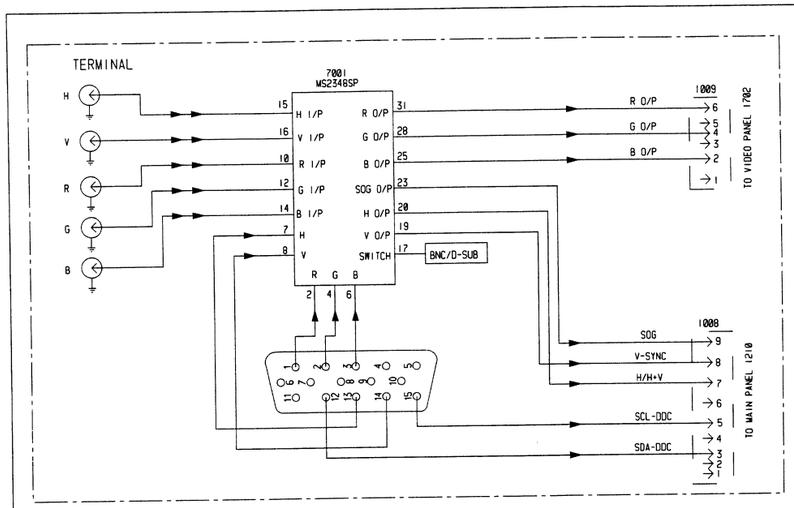


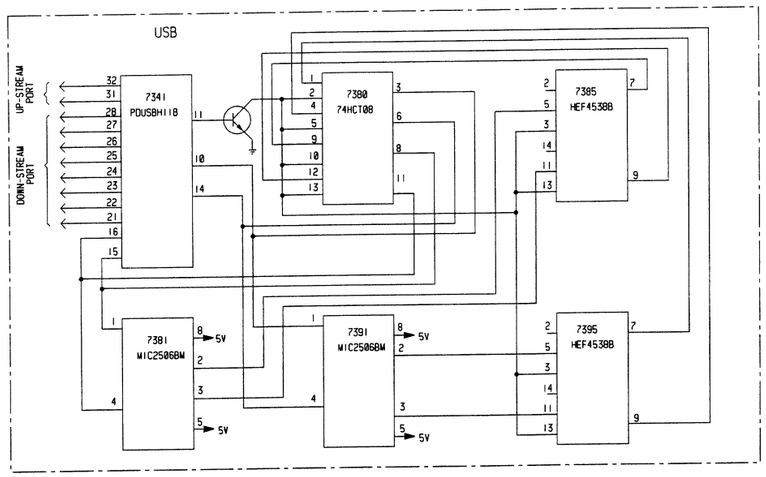
Fig. 3.15

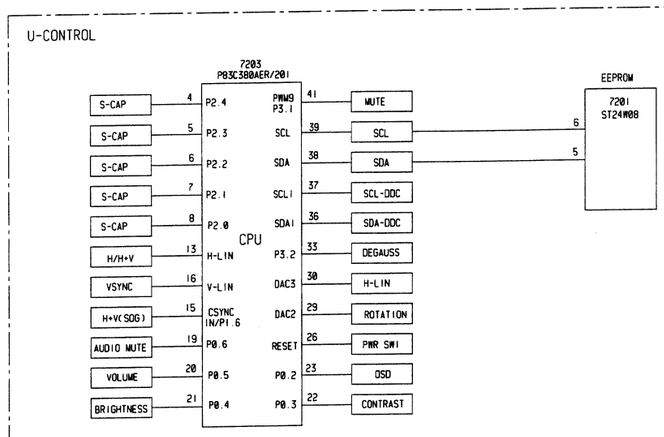


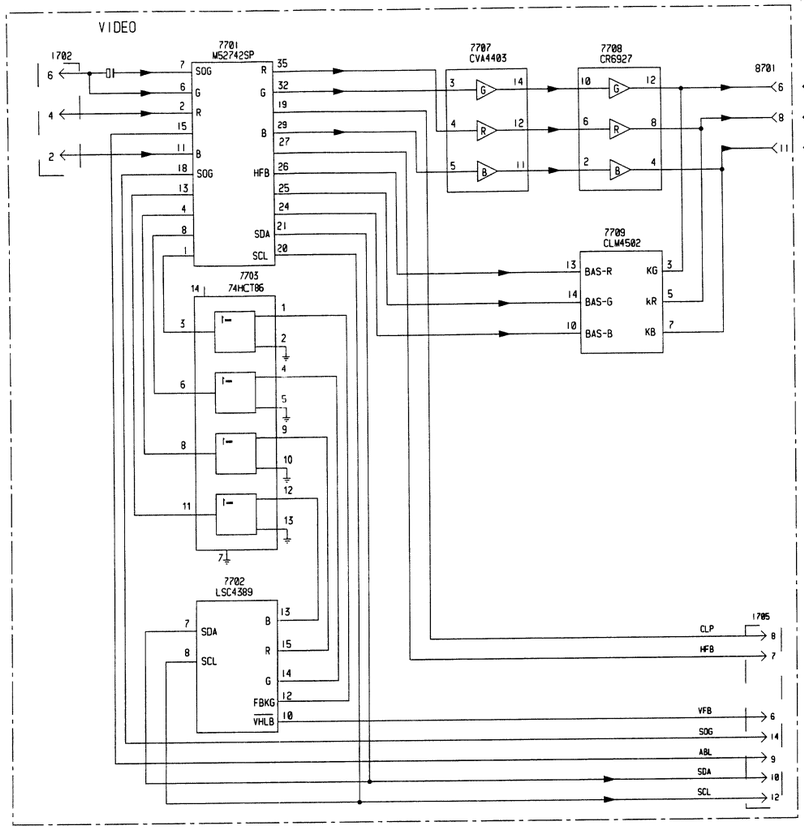


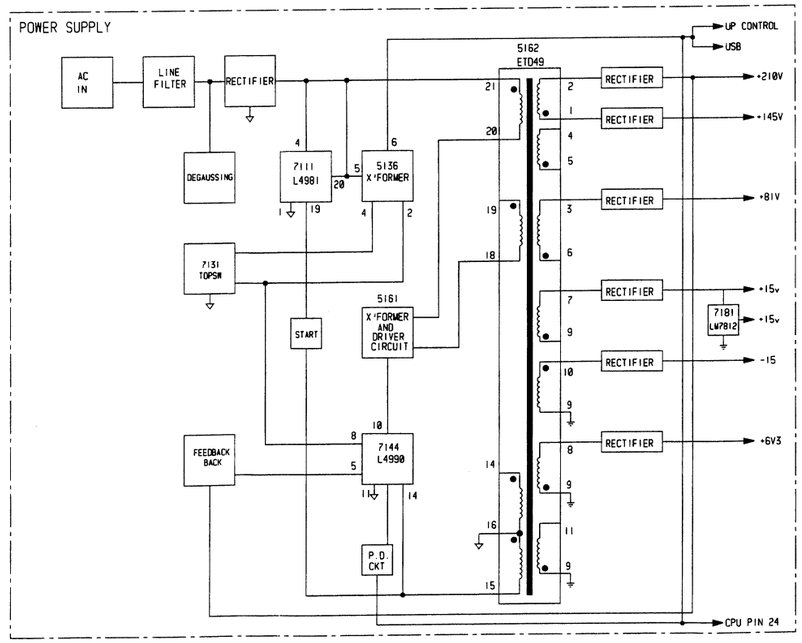
Block Diagram

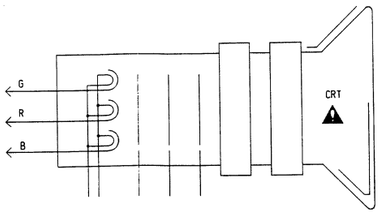




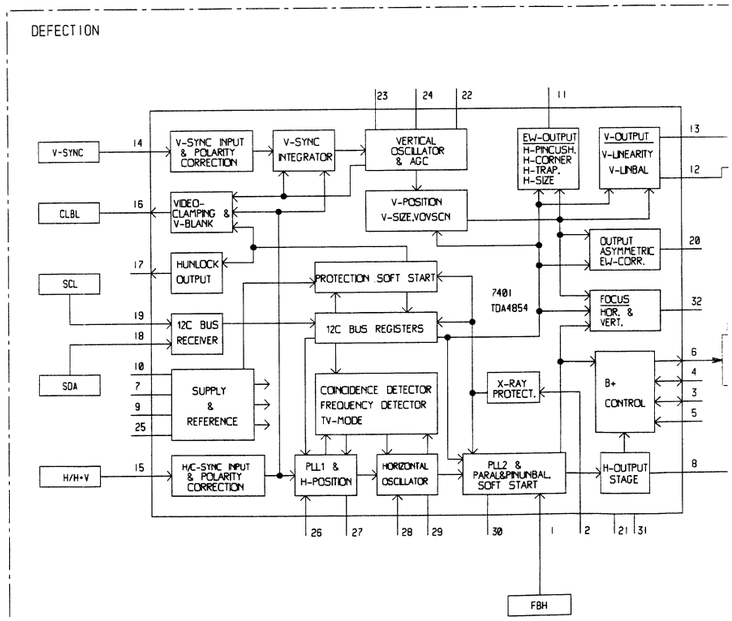




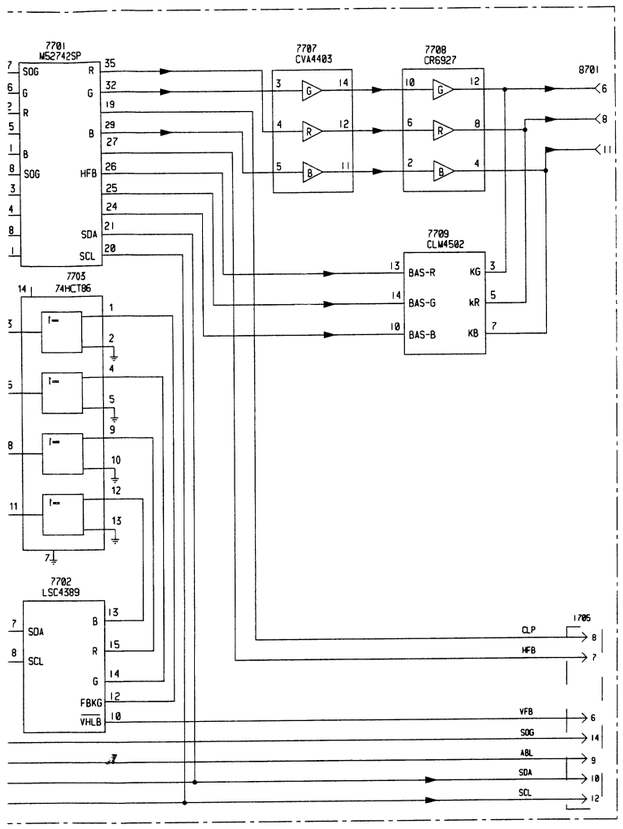


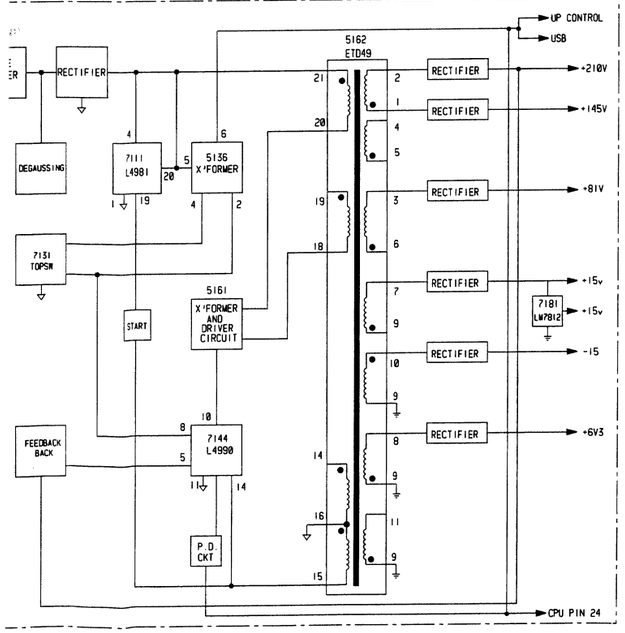


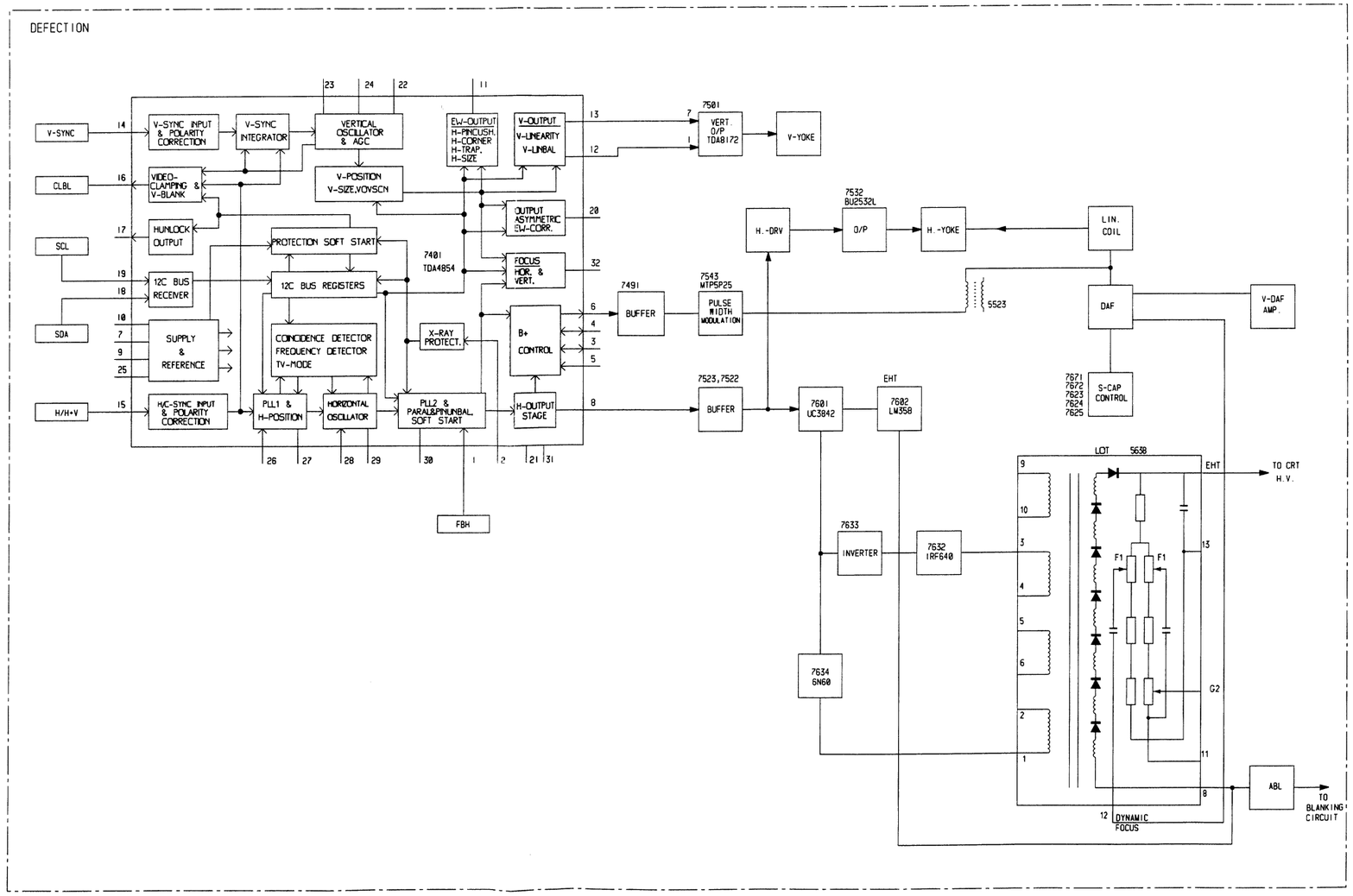
BLOCK DIAGRAM
CM5800 (107k/115k)



BLOCK DIAGRAM
CM5800 (107k/115k)







Video Panel C.B.A. (A)

3796 D 6	3747 E 6	2798 E 4	2751 D 6	1701 C 3
3797 E 6	3748 B 4	3701 B 7	2752 D 6	1702 B 7
3798 E 6	3749 B 4	3702 B 7	2753 D 6	1704 D 5
3799 E 6	3750 B 3	3703 B 7	2754 E 7	1705 E 3
3801 E 6	3751 B 6	3704 C 6	2755 E 7	2701 B 7
3802 E 6	3752 D 5	3705 B 7	2756 E 6	2702 B 7
3803 E 7	3753 A 6	3706 B 6	2757 D 2	2703 A 7
3804 E 6	3754 B 6	3707 C 6	2758 D 6	2704 B 7
3805 C 1	3755 A 6	3708 A 6	2759 D 6	2705 C 7
3811 D 5	3756 A 3	3709 A 7	2760 E 4	2706 B 6
3812 C 5	3757 A 3	3710 C 6	2761 E 4	2707 C 6
3814 B 4	3758 A 3	3711 B 6	2762 E 4	2708 B 6
3815 B 3	3759 B 5	3712 C 6	2763 E 3	2709 D 6
3816 C 3	3760 B 5	3713 C 7	2764 E 3	2710 B 6
3819 B 5	3761 A 3	3714 C 6	2765 E 3	2712 A 6
3821 B 5	3762 B 3	3715 C 6	2766 E 3	2714 A 5
3823 B 6	3763 B 3	3716 C 6	2767 E 4	2717 A 4
5702 C 6	3764 A 5	3717 C 7	2768 E 2	2718 A 4
5703 D 6	3765 B 6	3718 B 7	2769 E 3	2719 A 4
5704 E 2	3766 B 3	3719 B 6	2770 E 3	2720 B 2
5705 E 2	3767 A 6	3720 C 6	2771 E 3	2721 B 4
5706 B 4	3768 A 6	3721 B 6	2772 C 3	2722 B 3
5707 B 4	3769 C 4	3722 B 6	2773 D 5	2723 B 4
5708 C 3	3770 A 4	3723 A 6	2774 C 5	2724 B 4
5709 E 2	3771 A 4	3724 A 6	2775 B 7	2725 B 2
5711 A 4	3772 B 6	3725 A 6	2776 E 4	2726 B 2
5712 B 2	3773 B 4	3726 A 6	2777 D 5	2727 A 3
5713 E 6	3774 A 2	3727 A 6	2778 C 2	2728 A 3
6702 A 7	3775 A 2	3728 C 6	2779 C 4	2729 A 3
6708 D 5	3776 A 2	3729 A 5	2780 C 3	2730 B 3
6709 D 2	3777 A 5	3730 A 5	2781 C 2	2731 B 3
6710 B 4	3778 A 2	3731 C 7	2782 A 7	2732 B 3
6711 B 3	3779 B 2	3732 C 6	2783 E 2	2733 C 2
6712 B 2	3780 C 1	3733 C 6	2784 A 6	2735 B 4
7701 B 6	3781 B 3	3734 A 7	2785 A 5	2738 A 3
7702 D 6	3784 B 3	3735 A 7	2786 A 5	2739 A 3
7703 D 7	3785 B 6	3736 B 6	2787 A 4	2740 A 2
7707 B 5	3786 C 1	3737 E 6	2788 A 3	2741 A 5
7708 A 2	3787 C 3	3738 A 3	2789 A 2	2742 B 2
7709 C 2	3788 C 2	3739 A 4	2790 A 6	2743 B 2
7725 E 7	3789 C 1	3740 B 5	2791 B 6	2744 B 3
7727 A 1	3790 A 5	3741 A 3	2792 C 5	2745 B 1
8701 C 4	3791 D 7	3742 D 7	2793 B 6	2746 A 1
8703 D 3	3792 E 7	3743 A 3	2794 A 5	2747 D 2
	3793 D 6	3744 B 4	2795 B 5	2748 A 7
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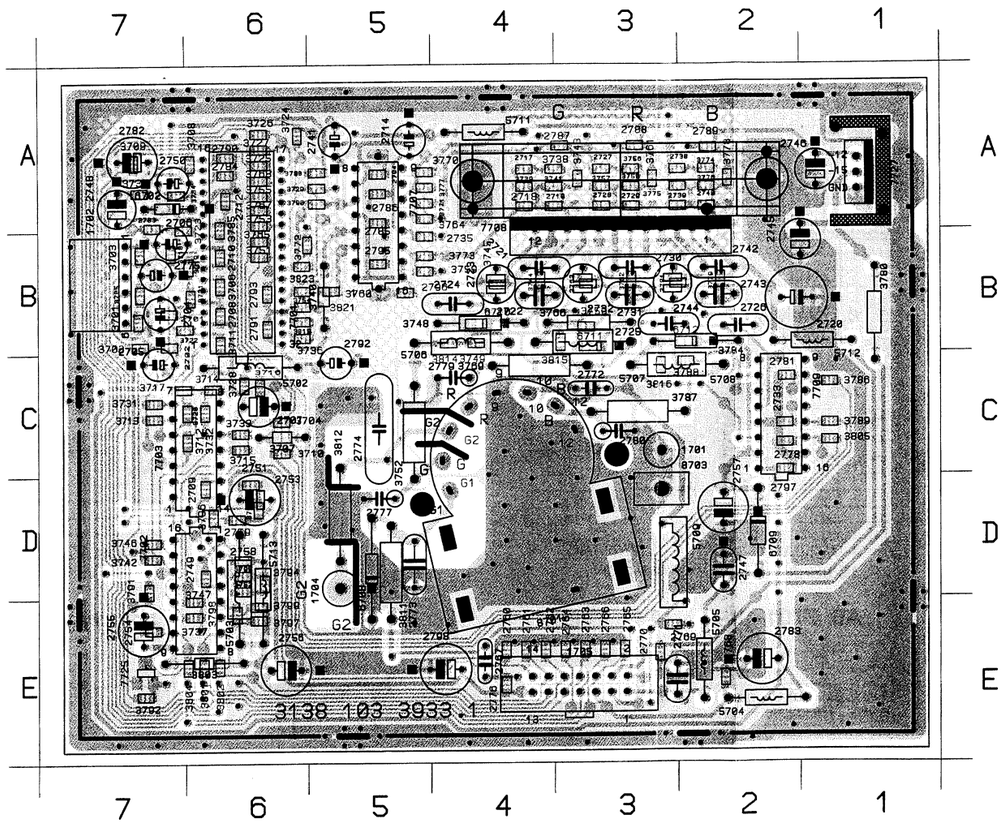
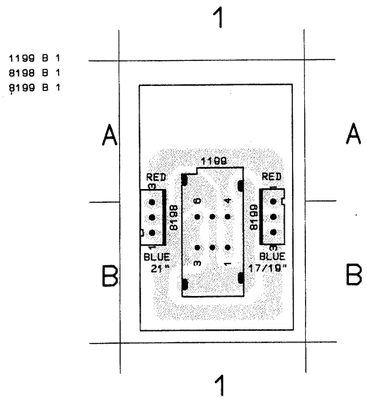
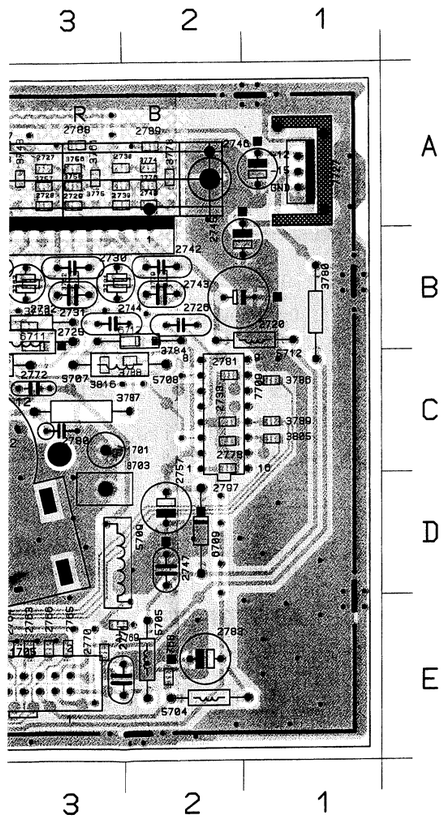


Power Switch Panel C.B.A. (G)

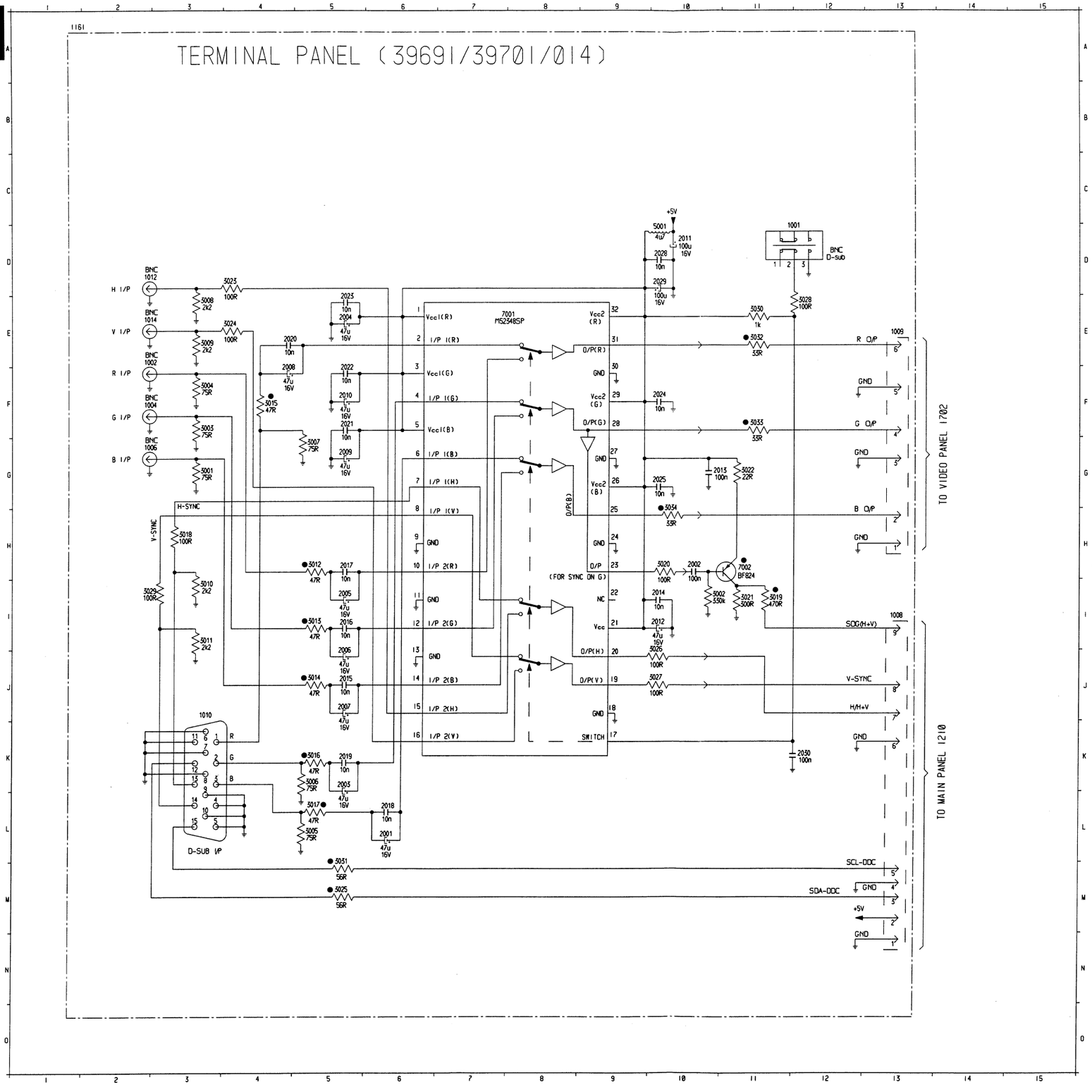


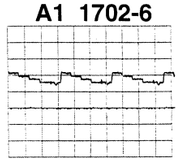
Power Switch Panel C.B.A. (G)

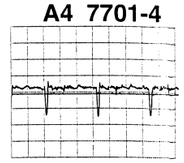


Terminal Schematic Diagram

A1

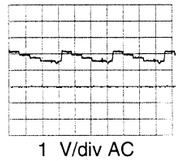


A1 1702-6

1 V/div AC
10 uS/div

A4 7701-4

0.1 V/div AC
10 uS/div

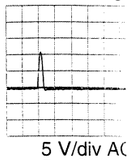
A7 770

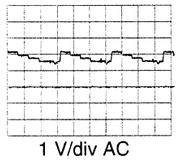
5 V/div AC
5 uS/div

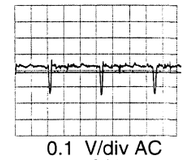
A1 1702-4

1 V/div AC
10 uS/div

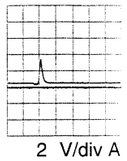
A4 7701-9

0.1 V/div AC
10 uS/div

A8 770

5 V/div AC
5 mS/div

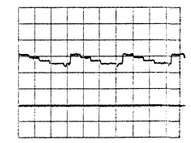
A1 1702-2

1 V/div AC
10 uS/div

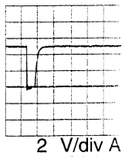
A4 7701-13

0.1 V/div AC
10 uS/div

A9 770

2 V/div A
5 uS/div

A2 7701-1

0.1 V/div AC
10 uS/div

A5 7701-7

1 V/div AC
10 uS/div

A10 77

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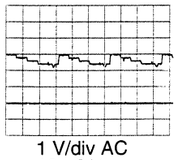
5 uS/div

A3 7701-2

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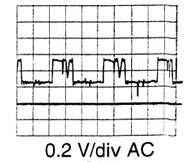
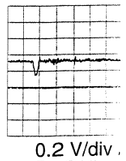
10 uS/div

A6 7701-18

0.2 V/div AC
10 uS/div

A11 77

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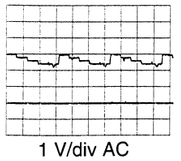
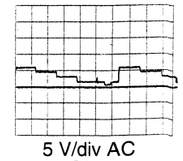
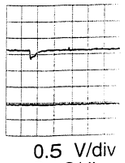
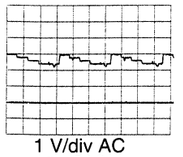
5 uS/div

A3 7701-6

1 V/div AC
10 uS/div

A7 7701-35

5 V/div AC
5 uS/div

A12 77

0.5 V/div
5 uS/div

A3 7701-11

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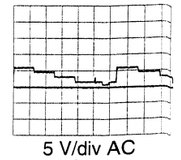
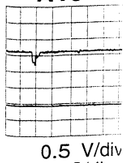
10 uS/div

A7 7701-32

5 V/div AC
5 uS/div

A13 77

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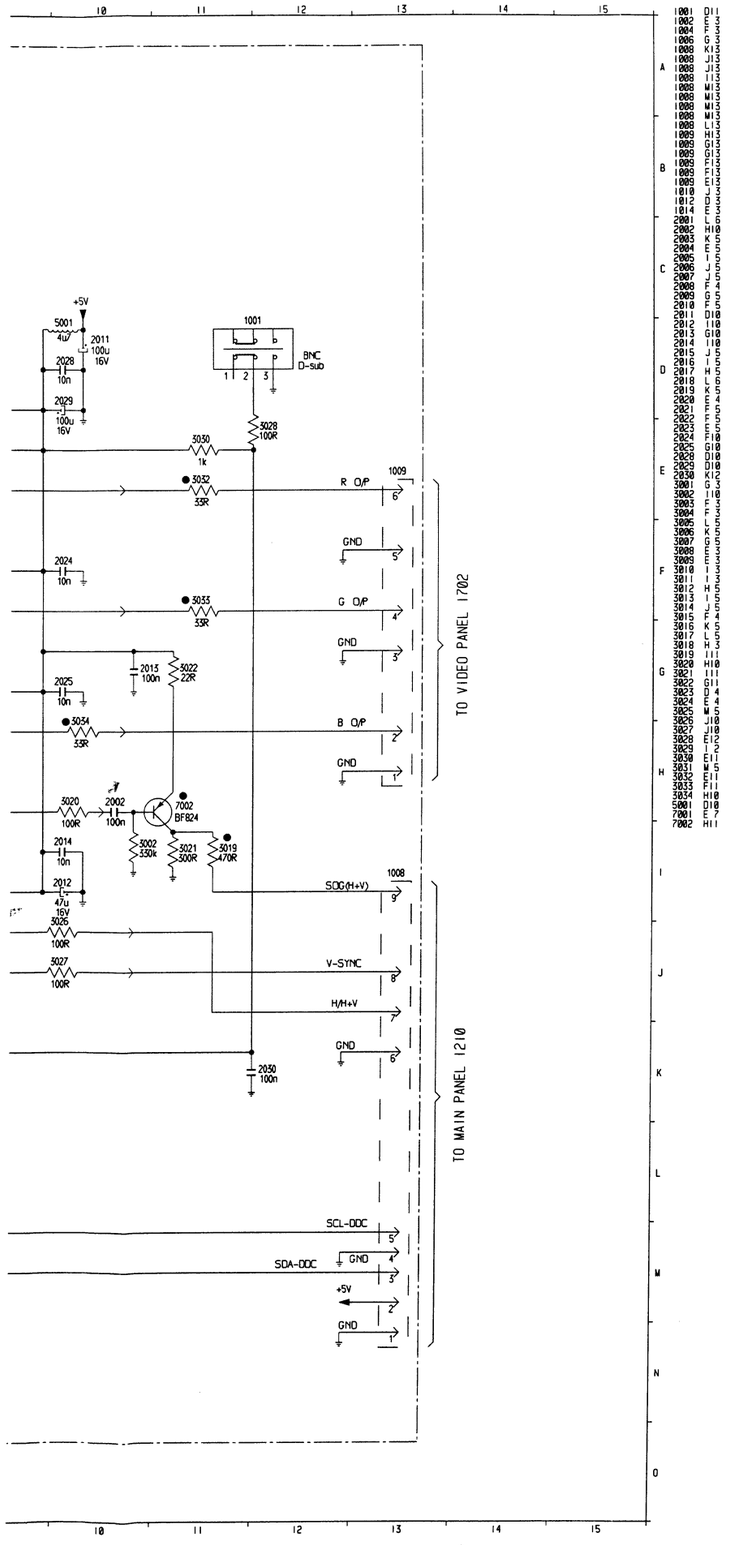
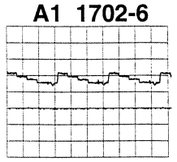
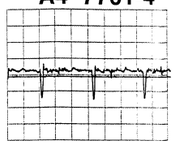
5 uS/div



Waveforms

A1 1702-6

1 V/div AC
10 uS/div

A4 7701-4

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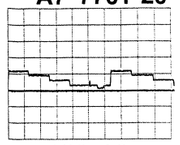
10 uS/div

A7 7701-29

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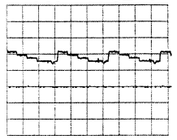
5 uS/div

A1 1702-4

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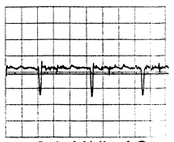
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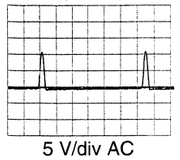
A8 7701-27

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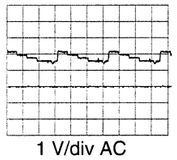
5 mS/div

A1 1702-2

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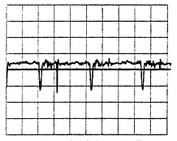
10 uS/div

A4 7701-13

0.1 V/div AC
10 uS/div

A9 7701-19

2 V/div AC
5 uS/div

A2 7701-1

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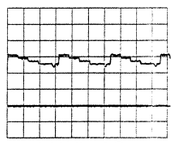
A5 7701-7

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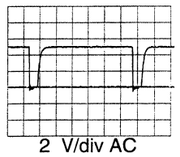
10 uS/div

A10 7725-c

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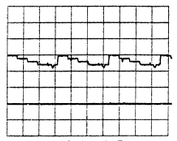
5 uS/div

A3 7701-2

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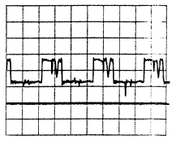
10 uS/div

A6 7701-18

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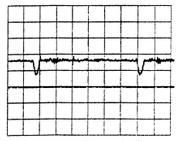
10 uS/div

A11 7702-1

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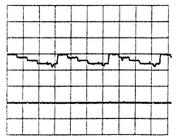
5 uS/div

A3 7701-6

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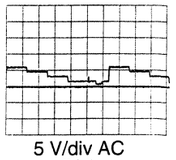
10 uS/div

A7 7701-35

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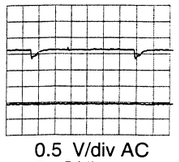
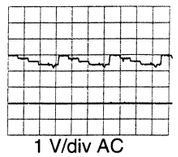
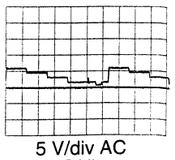
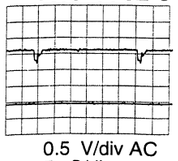
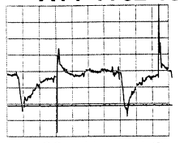
5 uS/div

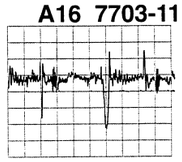
A12 7702-2

0.5 V/div AC
5 uS/div

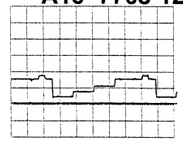
A3 7701-11

1 V/div AC
10 uS/div

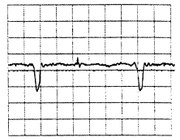
A7 7701-32

5 V/div AC
5 uS/div

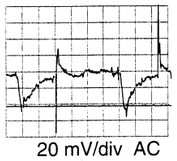
A13 7702-3

0.5 V/div AC
5 uS/div

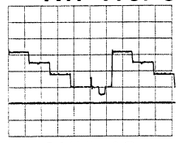
A14 7702-15

20 mV/div AC
5 uS/div

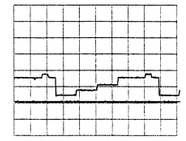
A16 7703-11

50 mV/div AC
5 uS/div

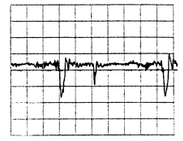
A19 7708-12

50 V/div AC
5 uS/div

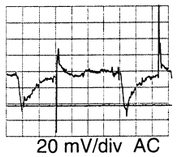
A22 1014

0.1 V/div AC
5 uS/div

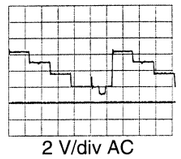
A14 7702-14

20 mV/div AC
5 uS/div

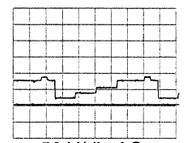
A17 7707-3

2 V/div AC
5 uS/div

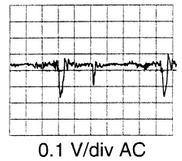
A19 7708-8

50 V/div AC
5 uS/div

A23 1002

0.1 V/div AC
5 uS/div

A14 7702-13

20 mV/div AC
5 uS/div

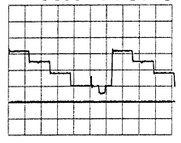
A17 7707-4

2 V/div AC
5 uS/div

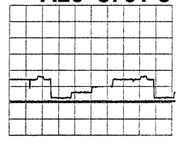
A19 7708-4

50 V/div AC
5 uS/div

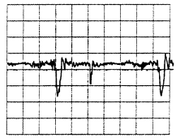
A23 1004

0.1 V/div AC
5 uS/div

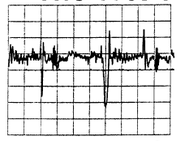
A15 7702-12

20 mV/div AC
5 uS/div

A17 7707-6

2 V/div AC
5 uS/div

A20 8701-8

50 V/div AC
5 uS/div

A23 1006

0.1 V/div AC
5 uS/div

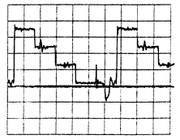
A16 7703-3

50 mV/div AC
5 uS/div

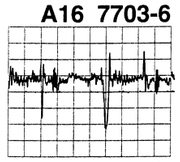
A18 7707-14

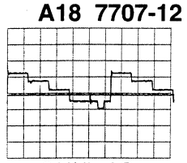
2 V/div AC
5 uS/div

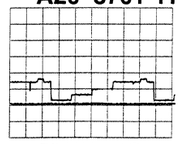
A20 8701-6

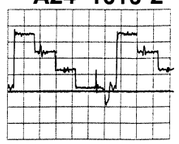
50 V/div AC
5 uS/div

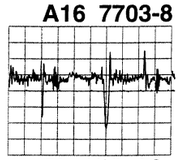
A24 1010-1

0.2 V/div AC
5 uS/div

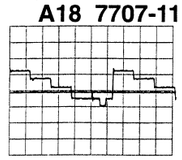
A16 7703-6

50 mV/div AC
5 uS/div

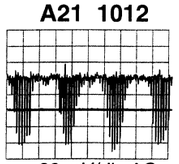
A18 7707-12

2 V/div AC
5 uS/div

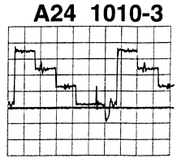
A20 8701-11

50 V/div AC
5 uS/div

A24 1010-2

0.2 V/div AC
5 uS/div

A16 7703-8

50 mV/div AC
5 uS/div

A18 7707-11

2 V/div AC
5 uS/div

A21 1012

20 mV/div AC
0.2mS/div

A24 1010-3

0.2 V/div AC
5 uS/div

Video

A2

VIDEO PANEL (39331/39341/014)

FROM FLY-IN CABLE

7701 M52742SP

7707 CVA4405

7708 CR6927

7709 CLM1502

7702 LSC4389P

7705 74HCT86

7775 BC848C

6702 BZX79-8V2

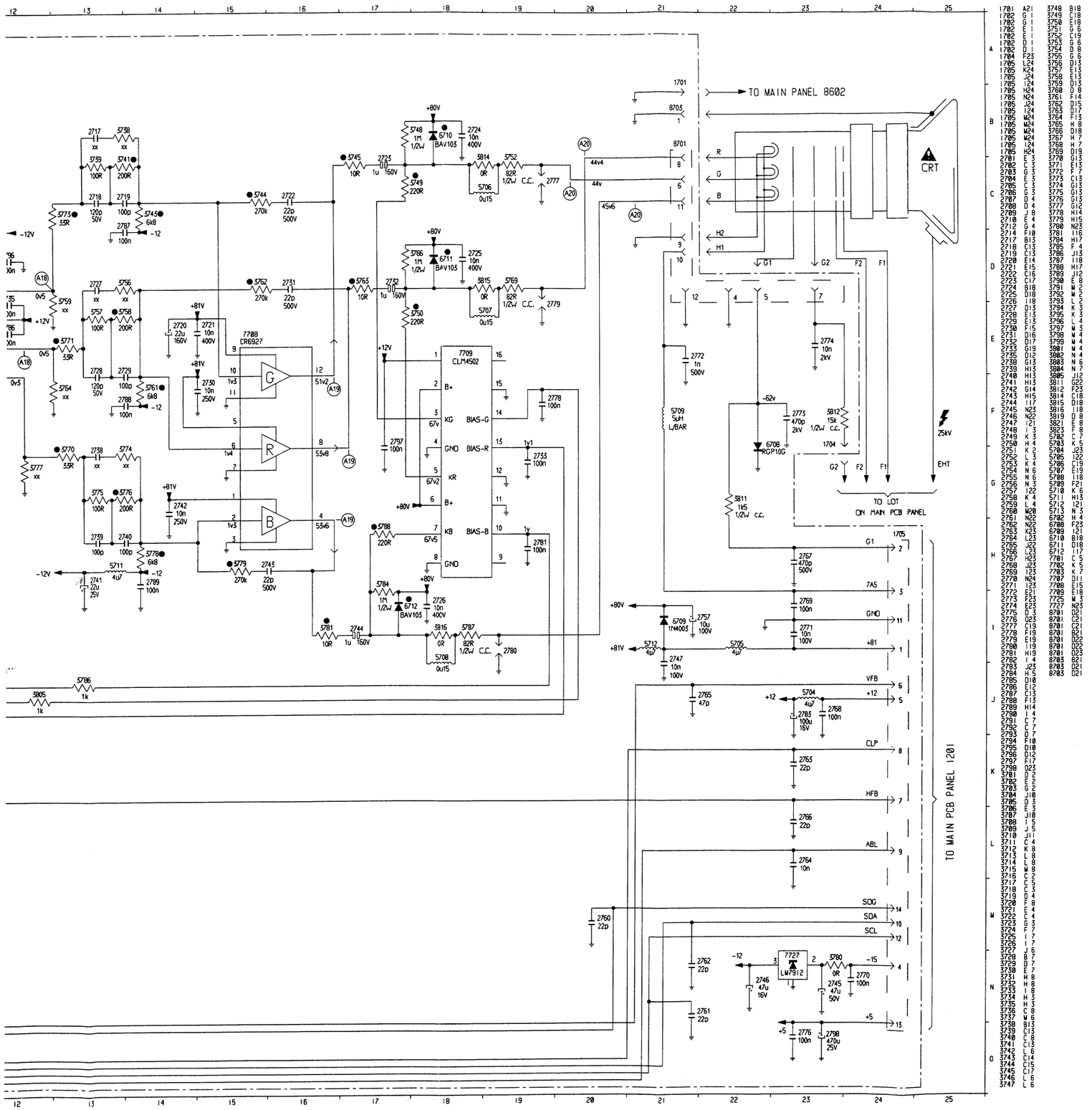
6710 BAV105

6711 BAV105

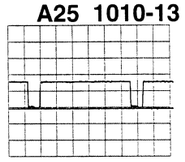
6712 BAV105

6709 1N4003

Waveforms for Diagram A1

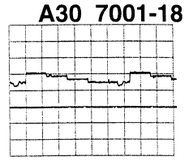


A25 1010-13



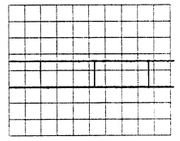
2 V/div AC
5 uS/div

A30 7001-18



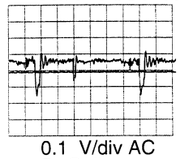
1 V/div AC
5 uS/div

A26 1010-14



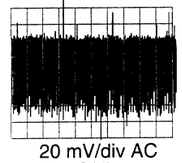
2 V/div AC
5 mS/div

A31 7001-17



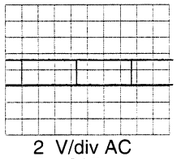
0.1 V/div AC
5 uS/div

A27 7001-24



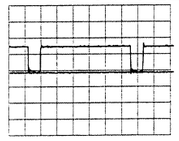
20 mV/div AC
5 mS/div

A32 7001-14



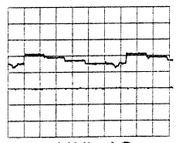
2 V/div AC
5 mS/div

A28 7001-22



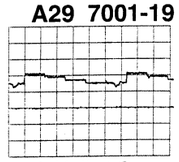
2 V/div AC
5 uS/div

A29 7001-21



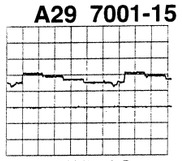
1 V/div AC
5 uS/div

A29 7001-19



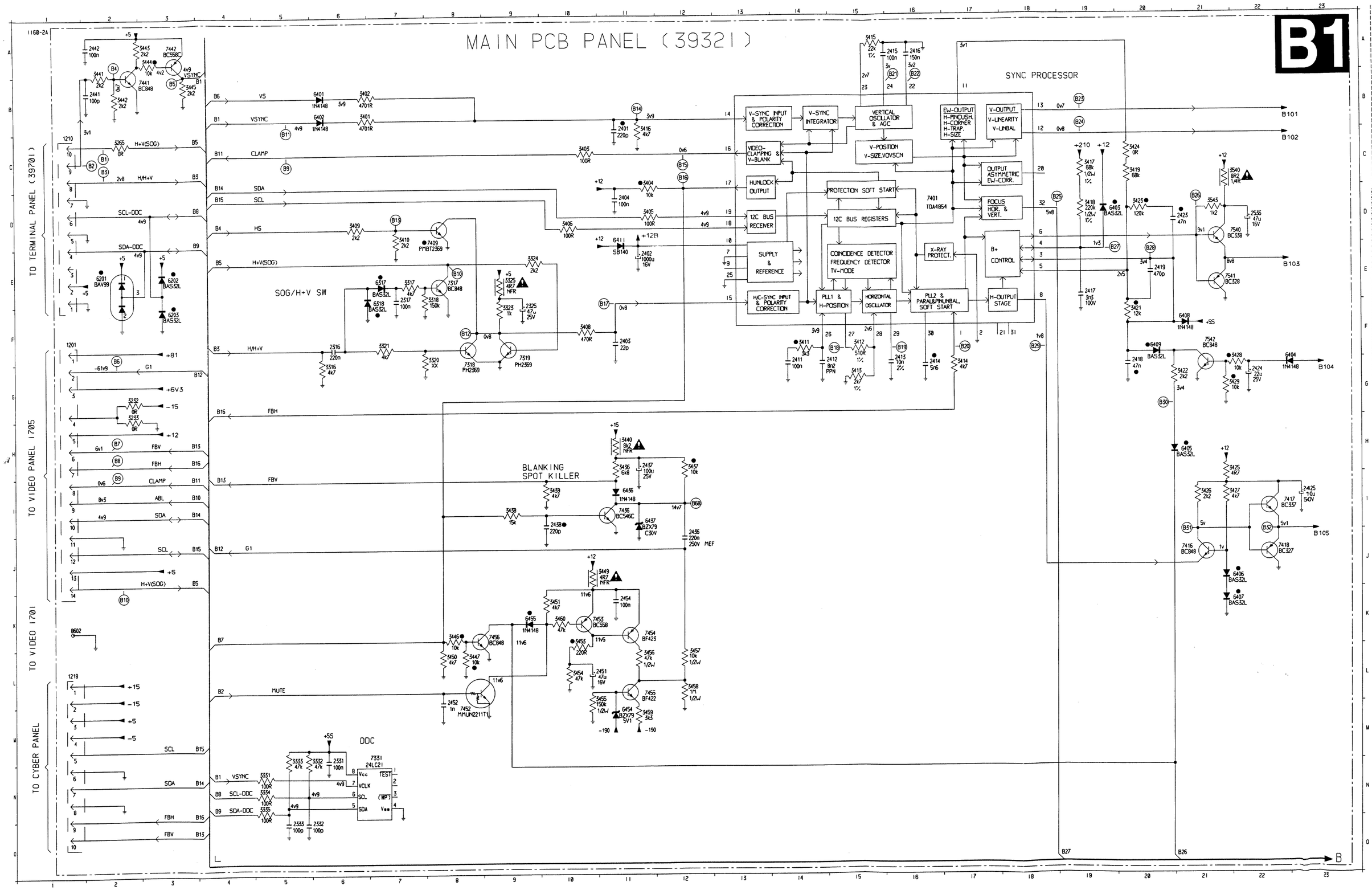
1 V/div AC
5 uS/div

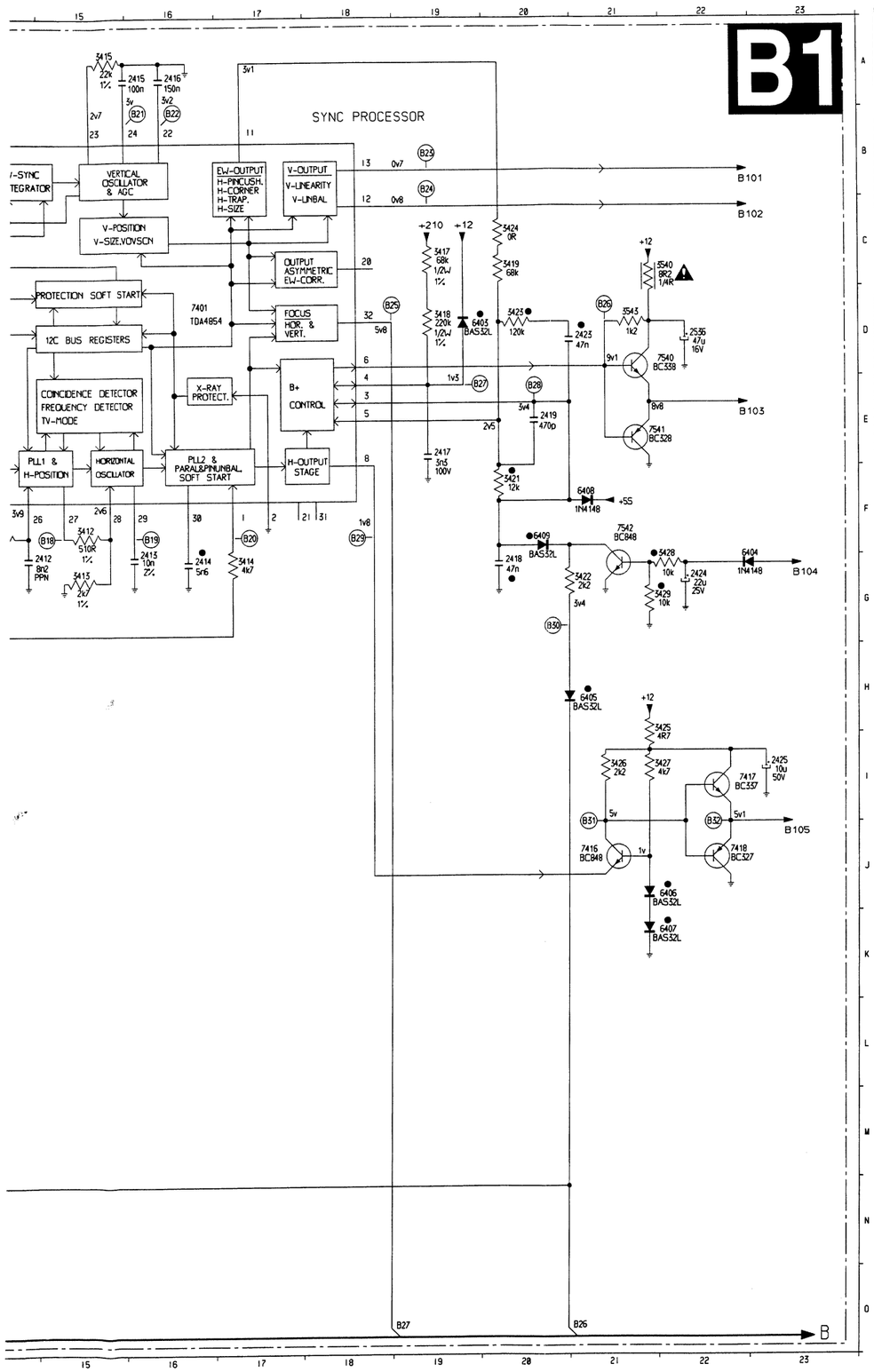
A29 7001-15



1 V/div AC
5 uS/div

Deflection


MAIN PCB PANEL (39321)
B1
SYNC PROCESSOR
V-SYNC INPUT & POLARITY CORRECTION
V-SYNC INTEGRATOR
VERTICAL OSCILLATOR & AGC
V-POSITION V-SIZE,VOVSCN
EW-OUTPUT H-PINCUSH. H-CORNER H-TRAP. H-SIZE
V-OUTPUT V-LINEARITY V-UNBAL
VIDEO-CLAMPING & V-BLANK
HUNLOCK OUTPUT
12C BUS RECEIVER
12C BUS REGISTERS
PROTECTION SOFT START
OUTPUT ASYMMETRIC EW-CORR.
FOCUS HOR. & VERT.
7401 TDA4854
SUPPLY & REFERENCE
COINCIDENCE DETECTOR FREQUENCY DETECTOR TV-MODE
X-RAY PROTECT.
B+ CONTROL
H/C-SYNC INPUT & POLARITY CORRECTION
PLL1 & H-POSITION
HORIZONTAL OSCILLATOR
PLL2 & PARAL&PINUBAL, SOFT START
H-OUTPUT STAGE
SOG/H+V SW
BLANKING SPOT KILLER
DDC
7331 24LC21
TO TERMINAL PANEL (39701)
TO VIDEO PANEL 1705
TO VIDEO 1701
TO CYBER PANEL
VS
VSYNC
CLAMP
SDA
SCL
HS
H+V(SOG)
H/H+V
FBH
FBV
MUTE
G1
SCL-DDC
SDA-DDC
B101
B102
B103
B104
B105

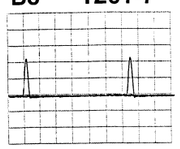


Deflection

B1 1210-10

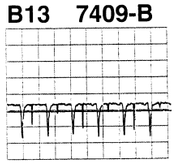
0.2 V/div AC
5 uS/div

B8 1201-7



5 V/div AC
5 uS/div

B13 7409-B

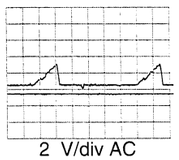


0.1 V/div AC
20 uS/div

B20 7401-1

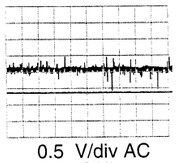
2 V/div AC
10 uS/div

B27 7401-4



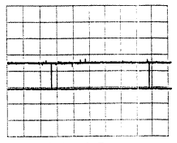
2 V/div AC
5 uS/div

B34 7518-B



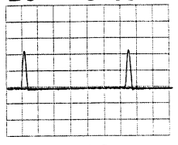
0.5 V/div AC
10 mS/div

B2 1210-9



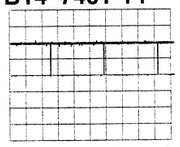
2 V/div AC
5 mS/div

B9 3403



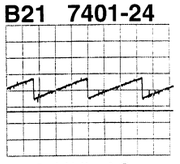
2 V/div AC
5 uS/div

B14 7401-14



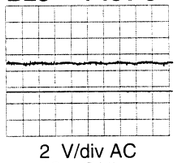
2 V/div AC
5 mS/div

B21 7401-24



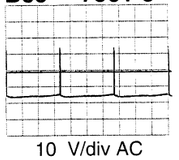
2 V/div AC
5 mS/div

B28 7401-3



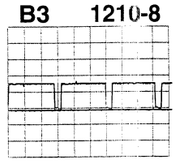
2 V/div AC
10 mS/div

B35 7501-3



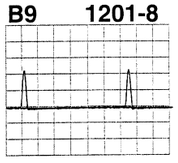
10 V/div AC
5 mS/div

B3 1210-8



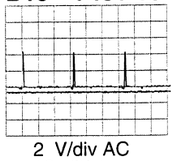
2 V/div AC
10 uS/div

B9 1201-8



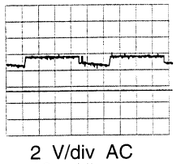
2 V/div AC
5 uS/div

B15 7401-16



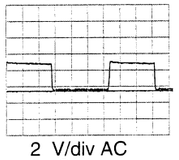
2 V/div AC
10 uS/div

B22 7401-22



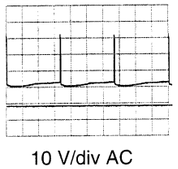
2 V/div AC
10 m/div

B29 7401-8



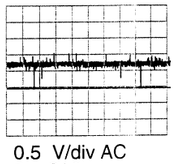
2 V/div AC
5 uS/div

B36 7501-6



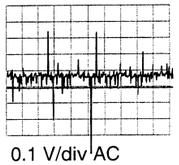
10 V/div AC
5 mS/div

B4 7441-B



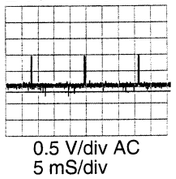
0.5 V/div AC
5 mS/div

B10 1201-14



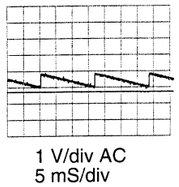
0.1 V/div AC
0.1 mS/div

B16 7401-17



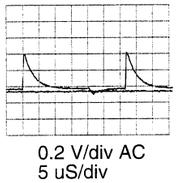
0.5 V/div AC
5 mS/div

B23 7401-23



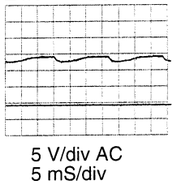
1 V/div AC
5 mS/div

B30 7419-B



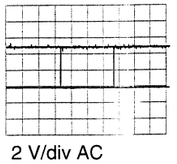
0.2 V/div AC
5 uS/div

B37 7501-2



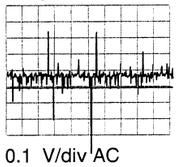
5 V/div AC
5 mS/div

B5 7442-C



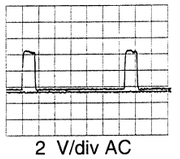
2 V/div AC
5 mS/div

B10 7317-C



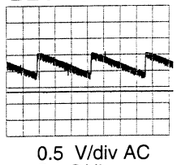
0.1 V/div AC
0.1 mS/div

B17 7401-15



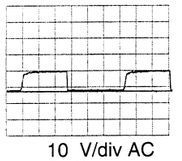
2 V/div AC
5 uS/div

B24 7401-24



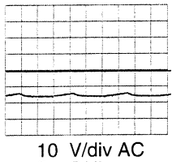
0.5 V/div AC
5 mS/div

B31 7416-C



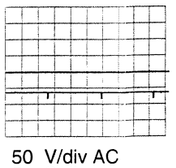
10 V/div AC
5 uS/div

B38 7501-4



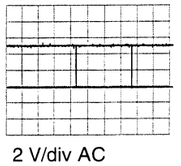
10 V/div AC
5 mS/div

B6 1201-6



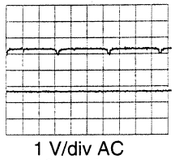
50 V/div AC
5 mS/div

B11 6402-P



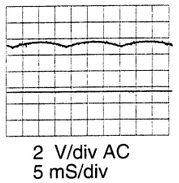
2 V/div AC
5 mS/div

B18 7401-27



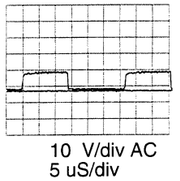
1 V/div AC
10 uS/div

B25 7401-32



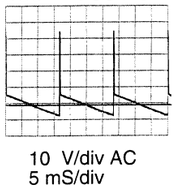
2 V/div AC
5 mS/div

B32 7417-E



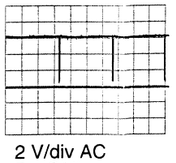
10 V/div AC
5 uS/div

B39 7501-5



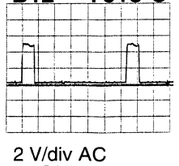
10 V/div AC
5 mS/div

B7 1201-6



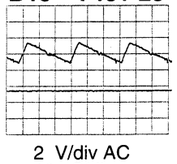
2 V/div AC
5 mS/div

B12 7318-C



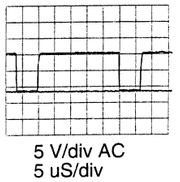
2 V/div AC
5 uS/div

B19 7401-29



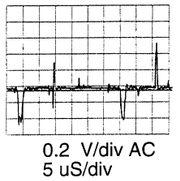
2 V/div AC
10 uS/div

B26 7401-6



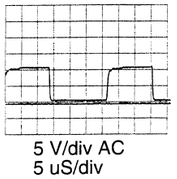
5 V/div AC
5 uS/div

B33 7518-C



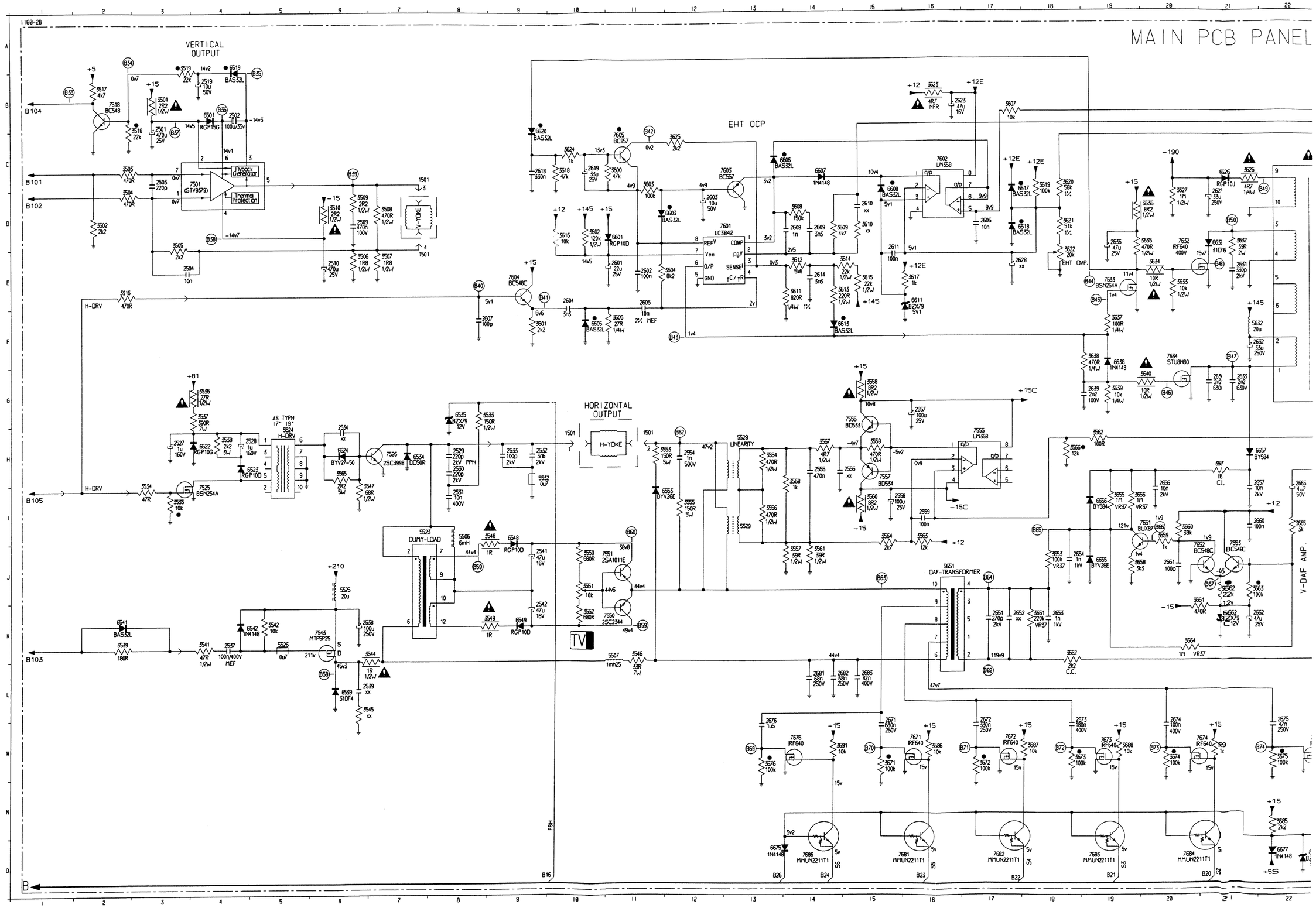
0.2 V/div AC
5 uS/div

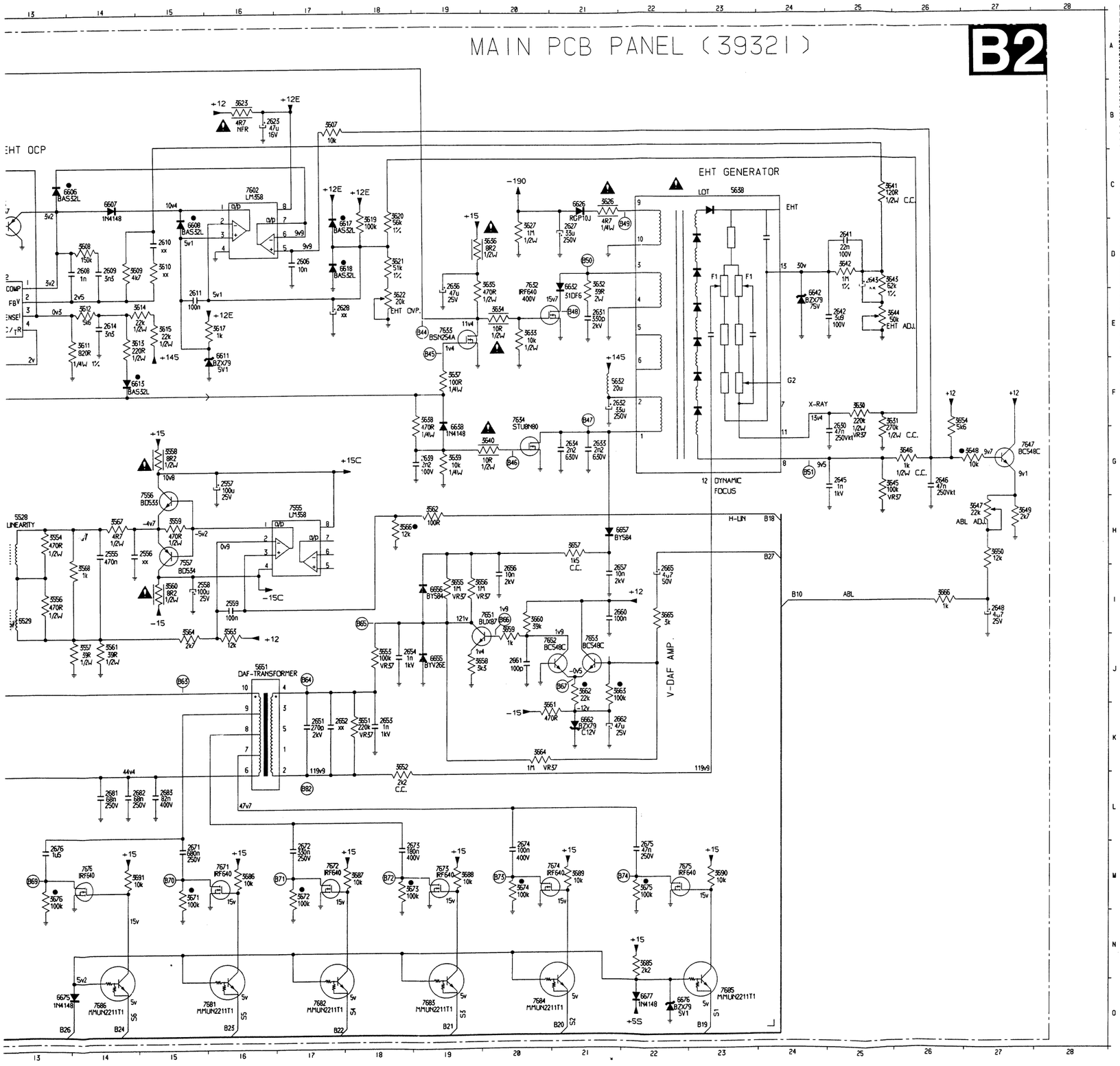
B40 7604-B



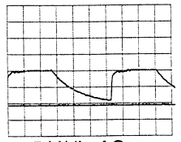
5 V/div AC
5 uS/div

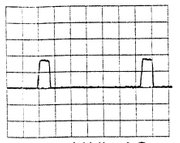
Deflection


MAIN PCB PANEL
1160-2B
VERTICAL OUTPUT
EHT OCP
HORIZONTAL OUTPUT
DUMY-LOAD
H-YOKE
V-YOKE
V-DAF AMP
DAF-TRANSFORMER
LINEARITY
EHT OVP.
Flyback Generator
Thermal Protection
7501 (STV9379)
7601 UC3842
7602 LM1458
7555 LM358
7526 2SC3998
7550 2SC2344
7551 2SA1011E
7525 BSN254A
7543 MTP5P25
7545 MTP5P25A
7652 BC548C
7653 BC548C
7654 STU8N80
7676 IRF640
7672 IRF640
7673 IRF640
7674 IRF640
7671 IRF640
7652 IRF640
7686 MMUN2211T1
7681 MMUN2211T1
7682 MMUN2211T1
7683 MMUN2211T1
7684 MMUN2211T1
B104
B101
B102
B105
B103
H-DRV
+210
+81
+15C
-15C
+5S
-5S
TV



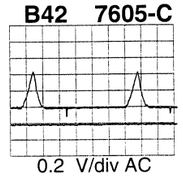
Waveforms

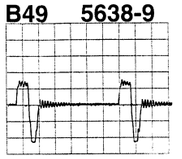
B41 7604-E

5 V/div AC
5 uS/div

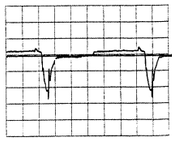
B48 7632-D

100 V/div AC
5 uS/div

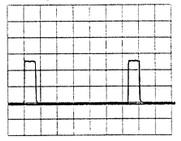
B55 7523-D

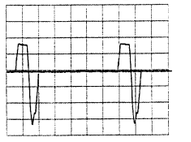
2 V/div AC
5 uS/div

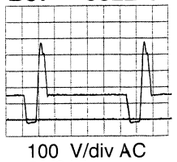
B42 7605-C

0.2 V/div AC
5 uS/div

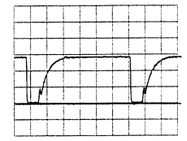
B49 5638-9

100 V/div AC
5 uS/div

B56 5522-6

5 V/div AC
5 uS/div

B43 7601-6

5 V/div AC
5 uS/div

B50 5638-3

100 V/div AC
5 uS/div

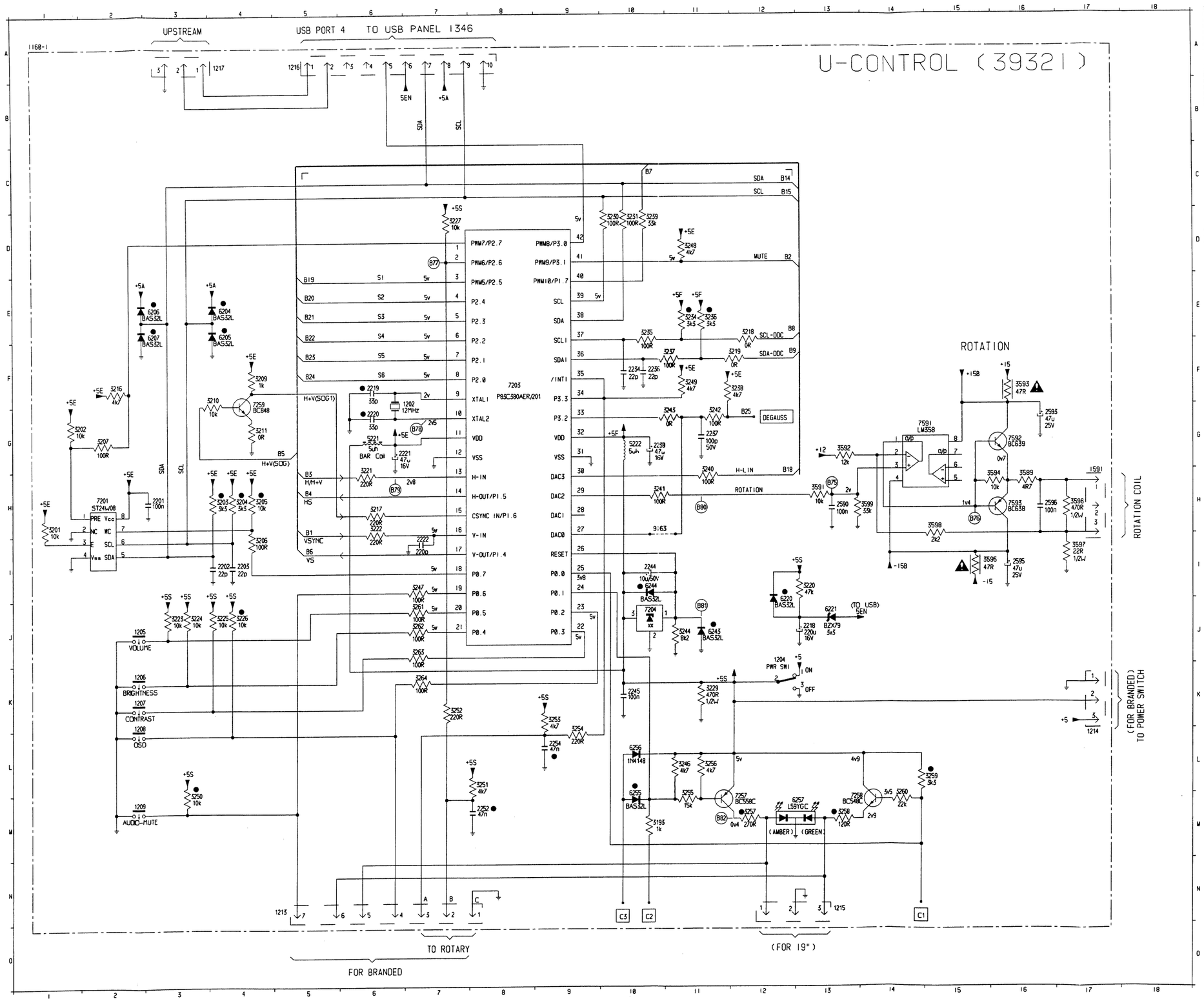
B57 5522-1

100 V/div AC
5 uS/div

B44 7633-D

5 V/div AC
5 uS/div

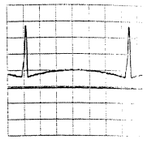
B51 5638-8

U-CTRL

B3

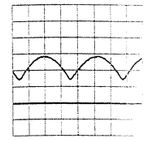


B62 3553



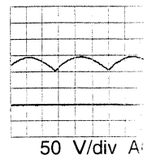
50 V/div AC
5 uS/div

B63 5651



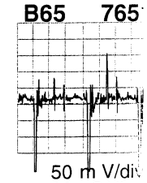
20 V/div AC
10 uS/div

B64 565



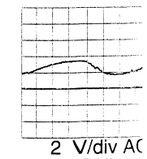
50 V/div A
10 uS/div

B65 765



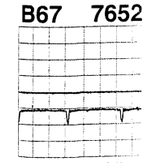
50 m V/di
10 uS/div

B66 765



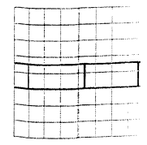
2 V/div AC
5 uS/div

B67 7652

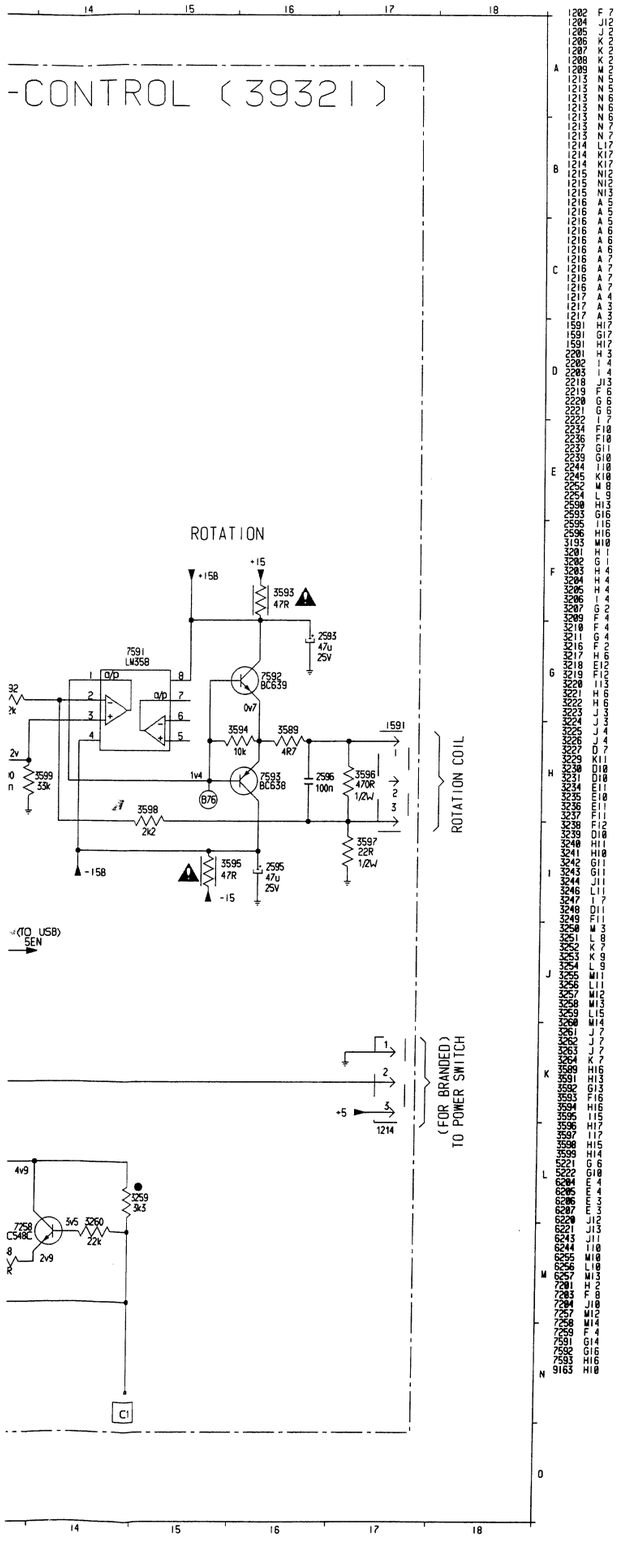


0.5 V/div
10 uS/div

B68 7436

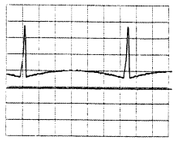


10 V/div A
5 mS/div



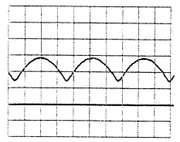
Waveforms

B62 3553



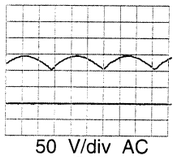
50 V/div AC
5 uS/div

B63 5651-10



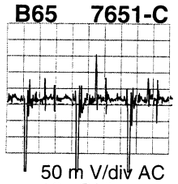
20 V/div AC
10 uS/div

B64 5651-4



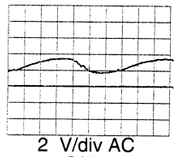
50 V/div AC
10 uS/div

B65 7651-C



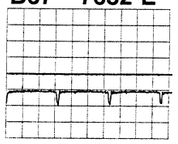
50 m V/div AC
10 uS/div

B66 7651-B



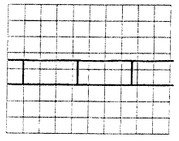
2 V/div AC
5 uS/div

B67 7652-E



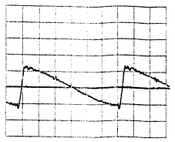
0.5 V/div AC
10 uS/div

B68 7436-C



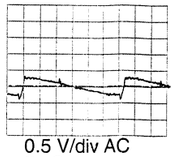
10 V/div AC
5 mS/div

B69 7676-D



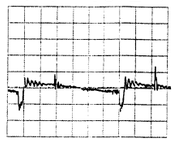
0.5 V/div AC
5 uS/div

B70 7671-D



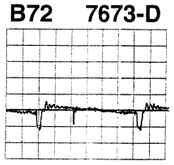
0.5 V/div AC
5 uS/div

B71 7672-D



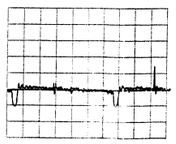
0.2 V/div AC
5 uS/div

B72 7673-D



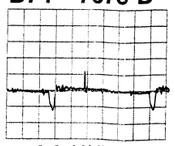
0.2 V/div AC
5 uS/div

B73 7674-D



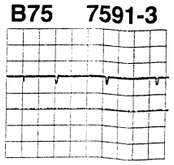
0.2 V/div AC
5 uS/div

B74 7675-D



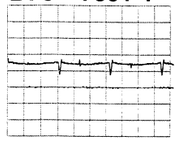
0.2 V/div AC
5 uS/div

B75 7591-3



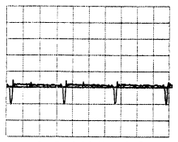
1 V/div AC
10 uS/div

B76 7591-1



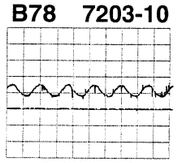
1 V/div AC
10 uS/div

B77 7203-2



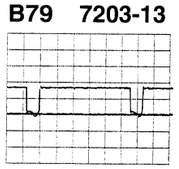
0.5 V/div AC
10 uS/div

B78 7203-10



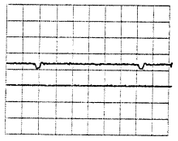
2 V/div AC
50 nS/div

B79 7203-13



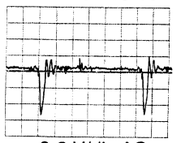
2 V/div AC
5 uS/div

B80 7203-29



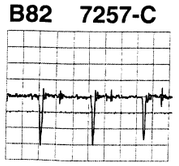
2 V/div AC
5 uS/div

B81 6243-N



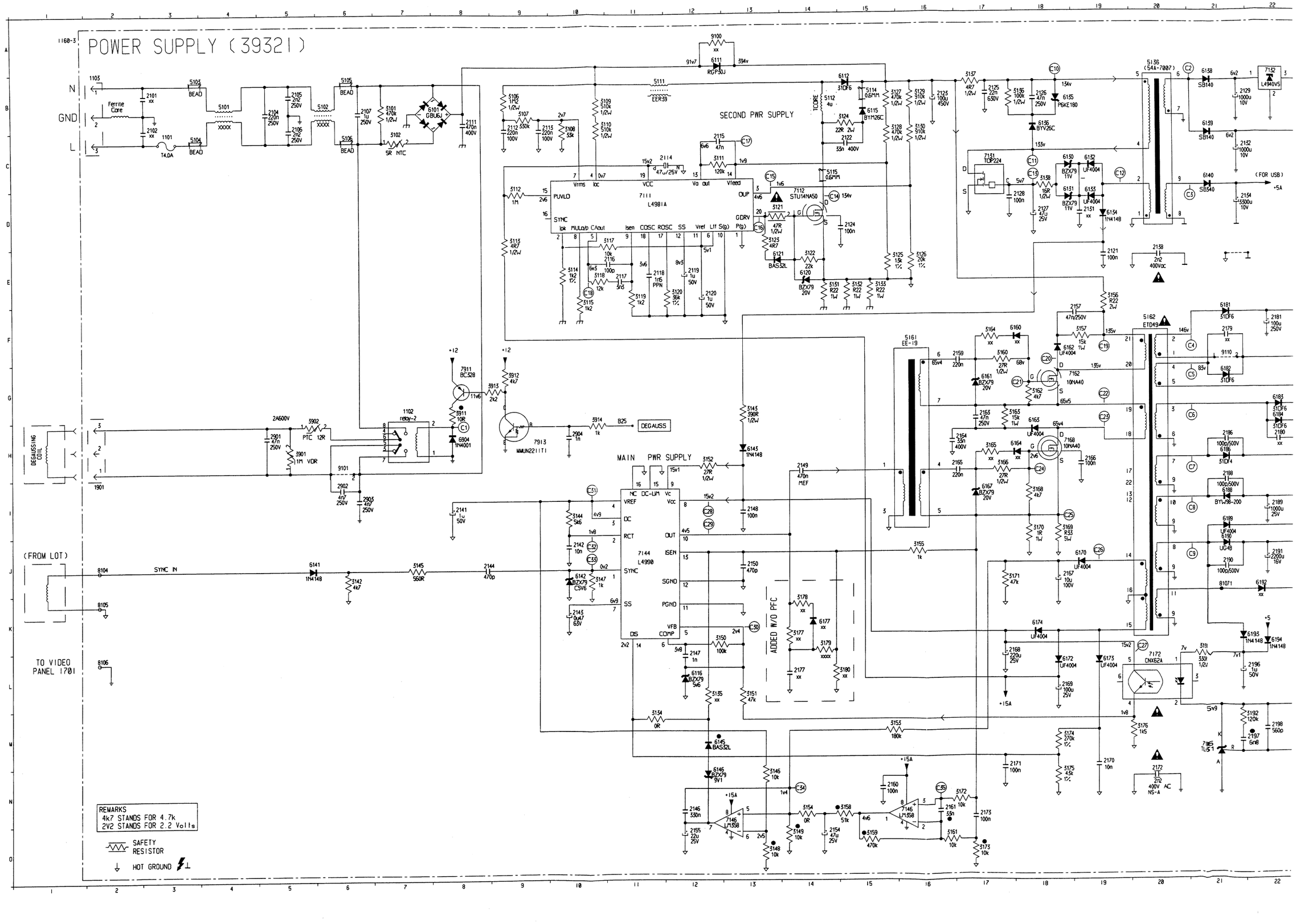
0.2 V/div AC
5 uS/div

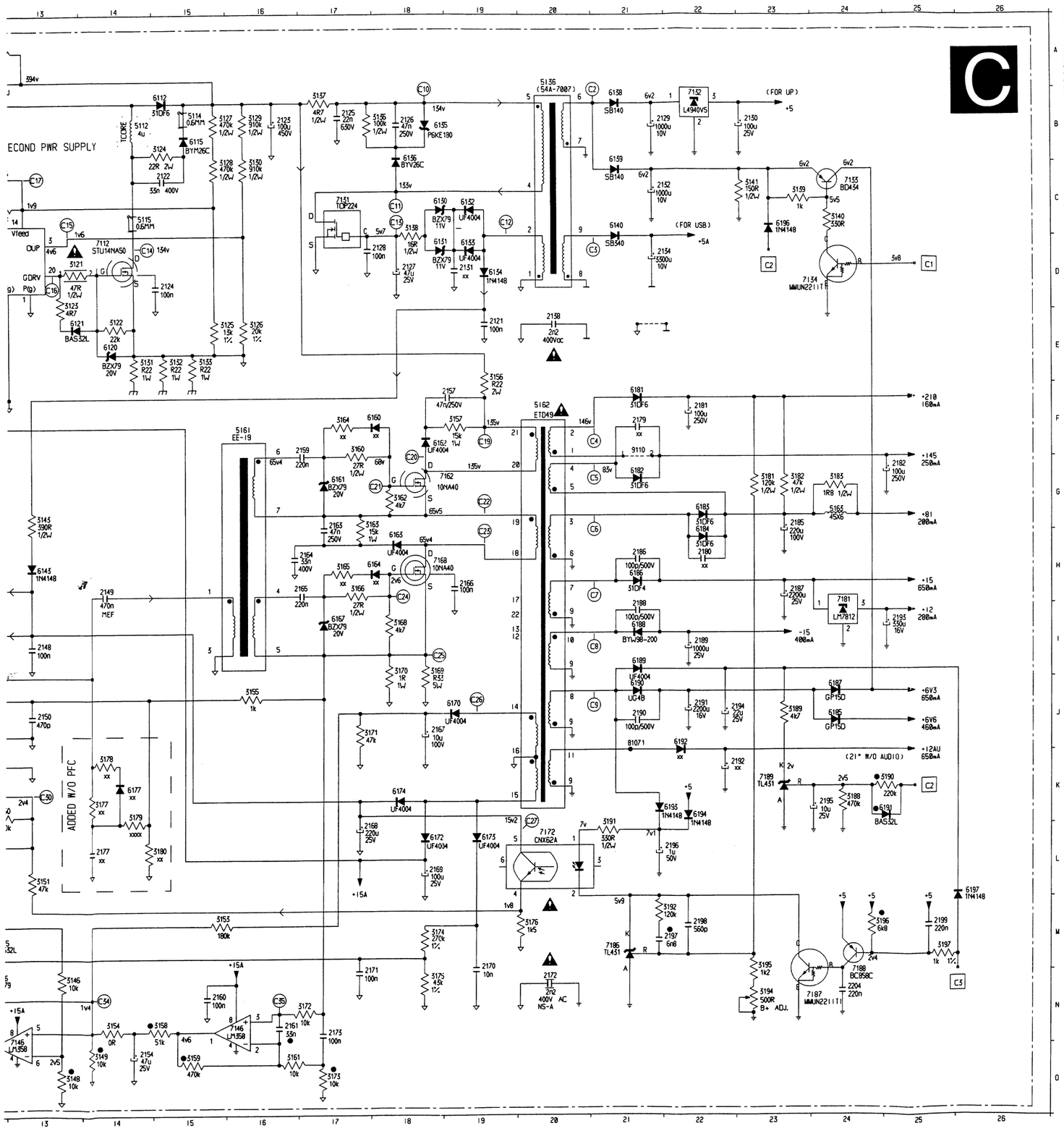
B82 7257-C



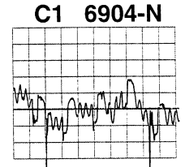
50 m V/div AC
10 uS/div

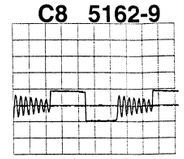
Power Supply

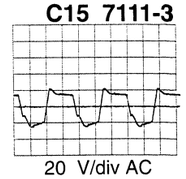


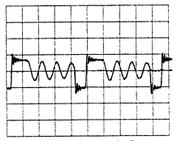


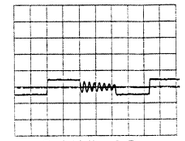
Wave forms

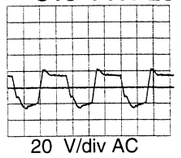
C1 6904-N

50 mV/div AC
5 uS/div

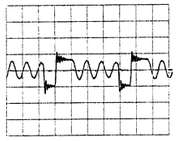
C8 5162-9

2 V/div AC
5 uS/div

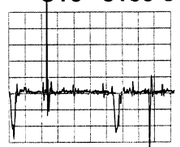
C15 7111-3

20 V/div AC
5 mS/div

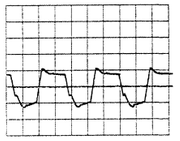
C2 5136-6

10 V/div AC
2 uS/div

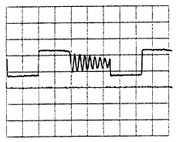
C9 5162-7

2 V/div AC
5 uS/div

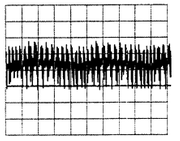
C16 7111-20

20 V/div AC
5 mS/div

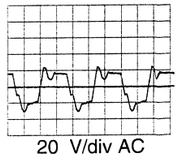
C3 5136-9

10 V/div AC
2 uS/div

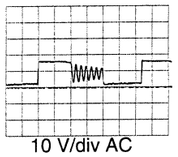
C10 5136-5

100 V/div AC
2 mS/div

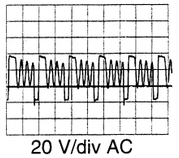
C17 7111-14

20 V/div AC
5 mS/div

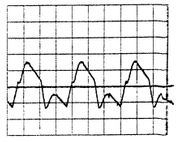
C4 5162-1

10 V/div AC
5 uS/div

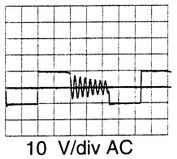
C11 5136-4

100 V/div AC
2 mS/div

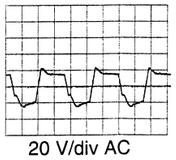
C18 7111-5

20 V/div AC
5 mS/div

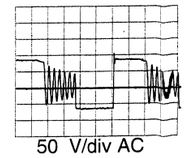
C5 5162-3

10 V/div AC
5 uS/div

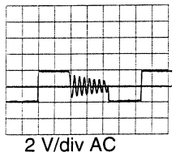
C12 5136-2

20 V/div AC
5 uS/div

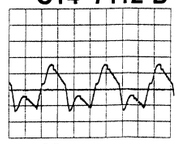
C19 5162-18

20 V/div AC
5 mS/div

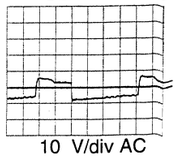
C6 5162-2

10 V/div AC
5 uS/div

C13 7131-C

20 V/div AC
5 mS/div

C20 5162-17

50 V/div AC
5 uS/div

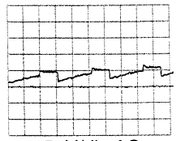
C7 5162-6

2 V/div AC
5 uS/div

C14 7112-D

20 V/div AC
5 mS/div

C21 7162-G

10 V/div AC
5 uS/div

Waveforms for Diagram C

C22 5162-16

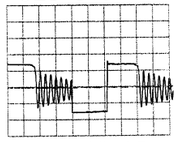


5 V/div AC
10 uS/div

C29 7144-10

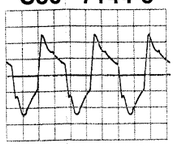
20 V/div AC
5 uS/div

C23 5162-15



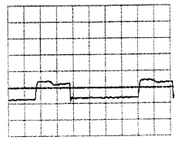
50 V/div AC
5 uS/div

C30 7144-5



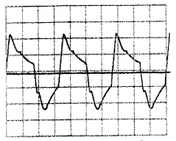
10 V/div AC
5 mS/div

C24 7168-G



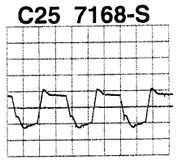
10 V/div AC
5 uS/div

C31 7144-4



10 V/div AC
5 mS/div

C25 7168-S

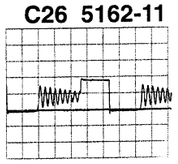


20 V/div AC
5 mS/div

C32 7144-2

10 V/div AC
5 mS/div

C26 5162-11



20 V/div AC
5 uS/div

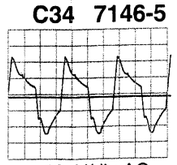
C33 7144-1

10 V/div AC
5 mS/div

C27 7172-5

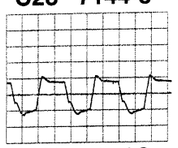
20 V/div AC
5 mS/div

C34 7146-5



10 V/div AC
5 mS/div

C28 7144-8

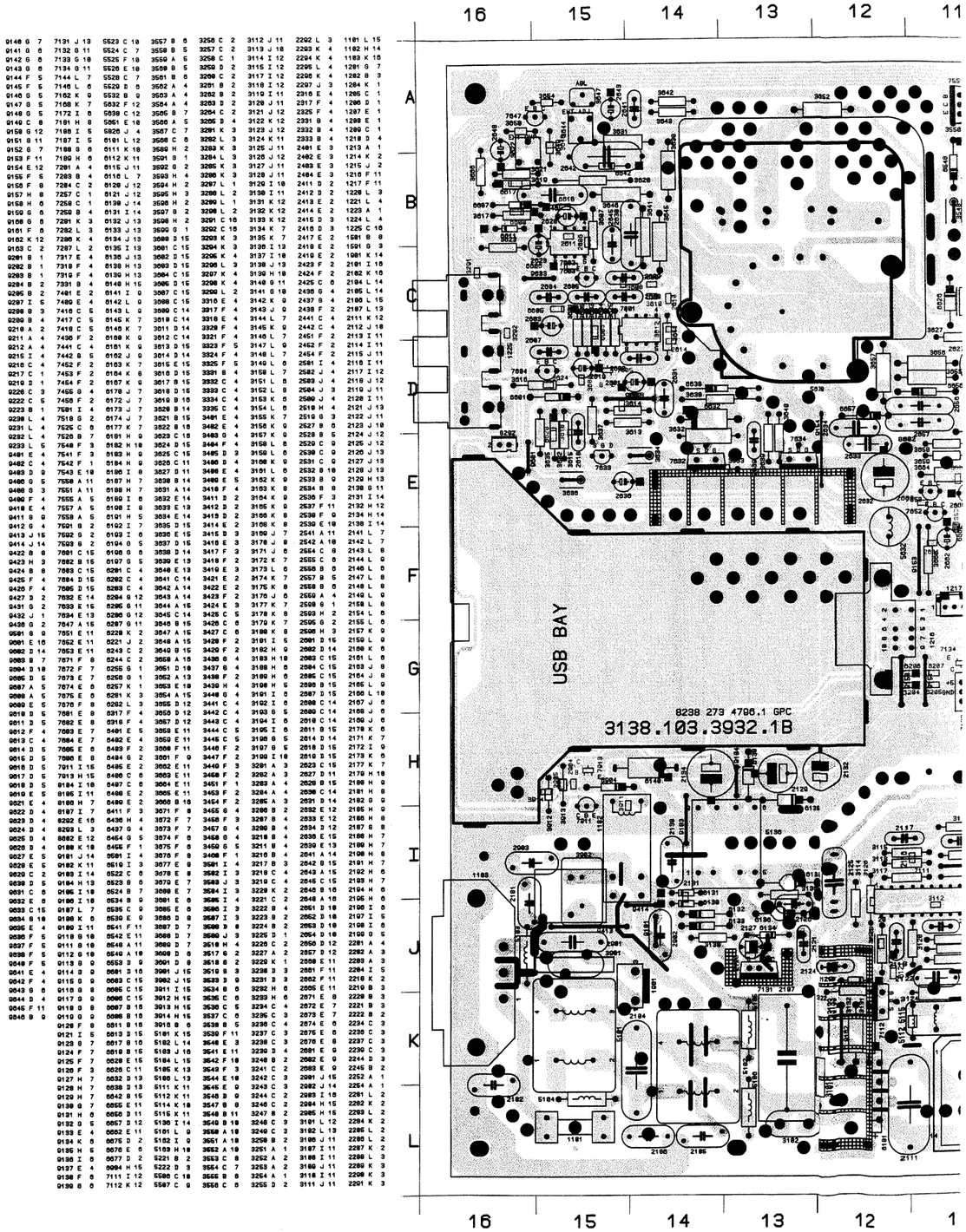


20 V/div AC
5 mS/div

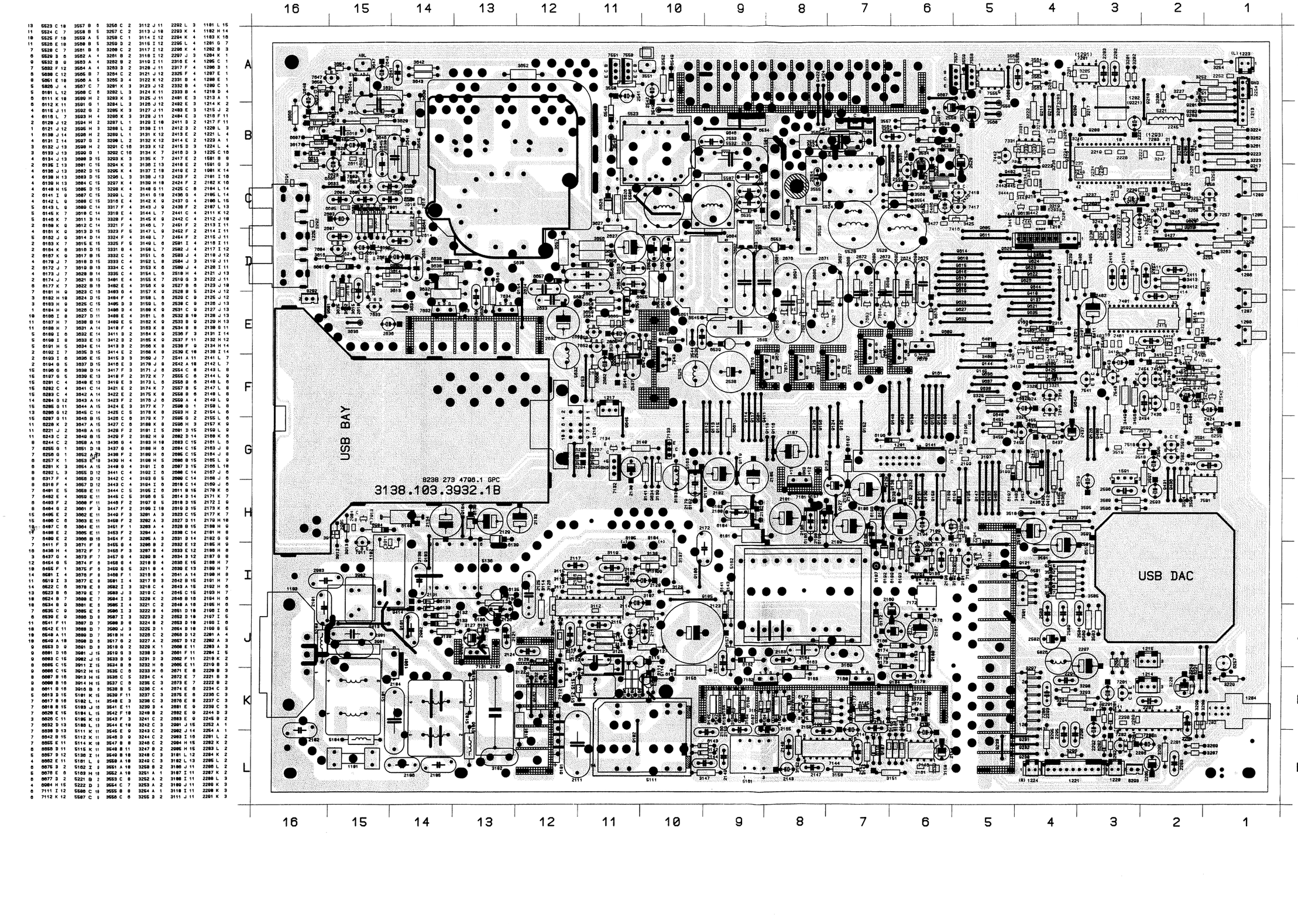
C35 7146-3

10 V/div AC
5 mS/div

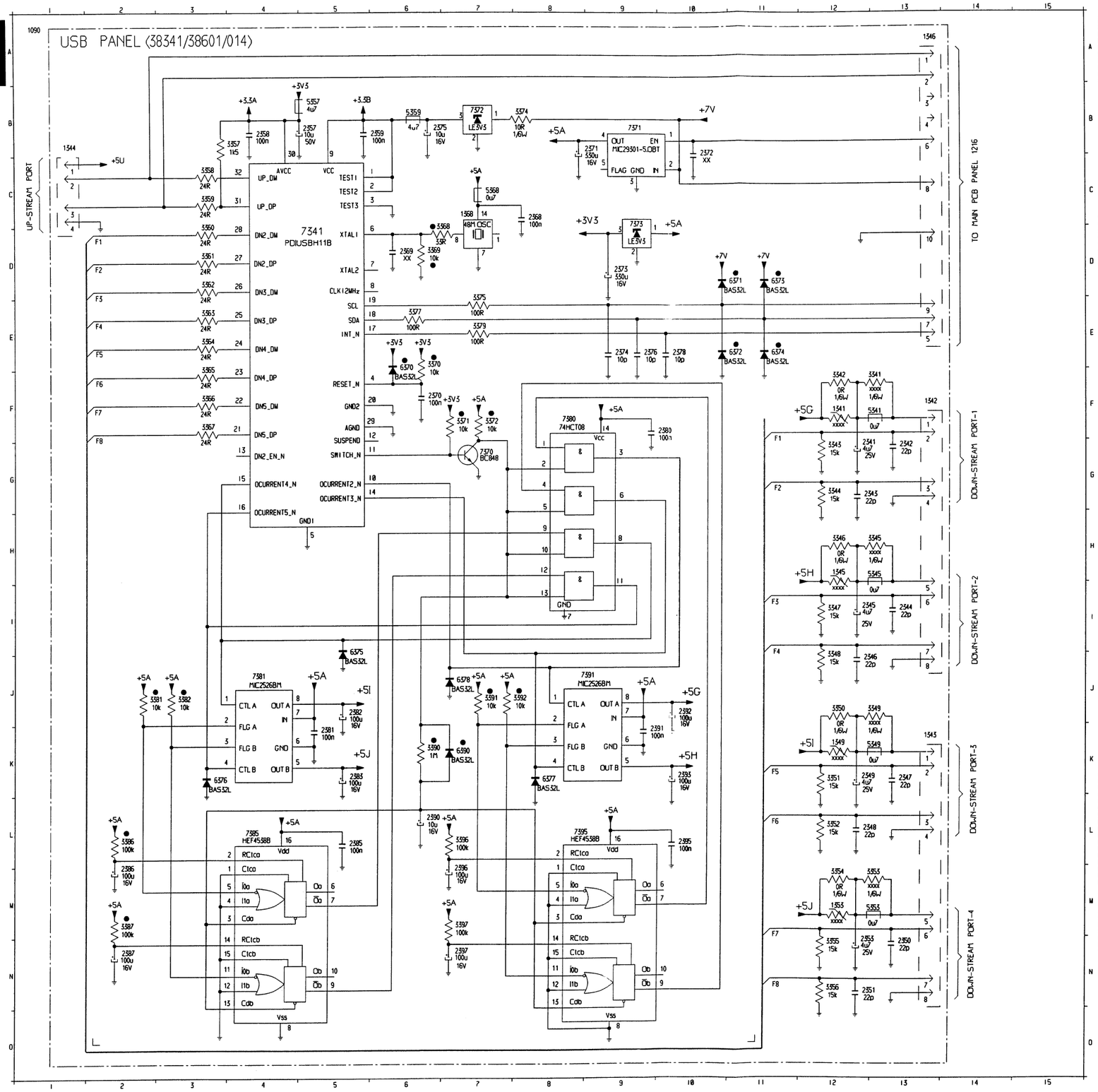
Main Panel



Main Panel C.B.A. (B1, B2, B3, C and D)



USB (option)



1341 F12
1342 I13
1342 I13
1342 H13
1342 H13
1342 G13
1342 G13
1342 F13
1342 F13
1343 L13
1343 L13
1343 K13
1343 K13
1344 C1
1344 C1
1344 G1
1344 B1
1345 H12
1346 E13
1346 E13
1346 D13
1346 C13
1346 C13
1346 B13
1346 B13
1346 A13
1346 A13
1349 K12
1353 M12
1368 C7
2341 G12
2342 G13
2343 G12
2344 I13
2345 I12
2346 J12
2347 K13
2348 L12
2349 K12
2350 N13
2351 N12
2353 N12
2357 B5
2358 B4
2359 B6
2368 C8
2369 D6
2370 F6
2371 B9
2372 B10
2373 D9
2374 E10
2375 B6
2376 E9
2378 F10
2380 F10
2381 K5
2382 J5
2383 K5
2385 L5
2386 M2
2387 N2
2390 L6
2391 K9
2392 J10
2393 K10
2395 L10
2396 M7
2397 N7
3341 F13
3342 F12
3343 G12
3344 G12
3345 H13
3346 H12
3347 I12
3348 J12
3349 J13
3350 J12
3351 K13
3352 L12
3353 M13
3354 M12
3355 N12
3356 N12
3357 B4
3358 C3
3359 C3
3360 D3
3361 D3
3362 D3
3363 E3
3364 E3
3365 F3
3366 F3
3367 F3
3368 D7
3369 D6
3370 E6
3371 F7
3372 F7
3374 B8
3375 E7
3377 E6
3379 E7
3381 J2
3382 J3
3386 L2
3387 M5
3390 K6
3391 J7
3392 J8
3396 L7
3397 M7
5341 F13
5345 H13
5346 K13
5353 M13
5357 B5
5359 B6
5368 C7
6370 E6
6371 D11
6372 E11
6373 D11
6374 E11
6375 I5
6376 K3
6377 K8
6378 J7
6390 K7
7341 D5
7370 G7
7371 B9
7372 B7
7373 C9
7380 F8
7381 J4
7385 L4
7391 J8
7395 L8
M343 N13
M343 N13
M343 M13
M343 M13

5353 F 1 2397
5357 D 3 3347
5359 D 3 3342
5368 D 2 3347
6370 D 3 3344
6371 A 2 3348
6372 A 1 3346
6373 B 3 3342
6374 B 3 3346
6375 E 2 3346
6376 D 2 3356
6377 E 2 3355
6378 E 2 3352
6390 B 3 3352
7341 D 3 3354
7370 B 2 3357
7371 B 3 3381
7372 B 4 3375
7373 C 3 3358
7380 B 2 3351
7381 A 2 3350
7385 A 2 3360
7391 C 2 3382
7395 C 3 3384
3385
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3360
3368
3367
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3372
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6390
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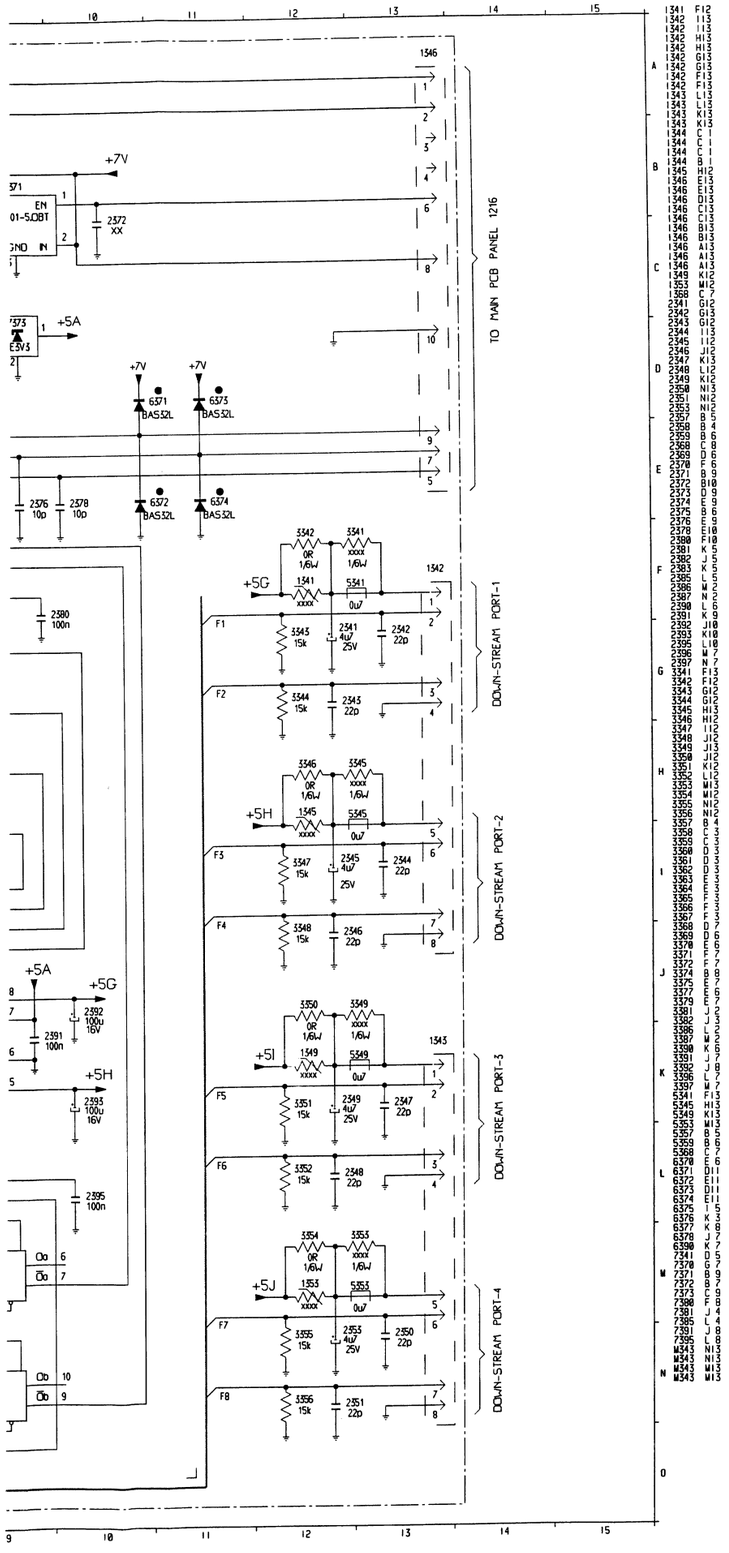
7395
M343
M343
M343
M343

USB Panel



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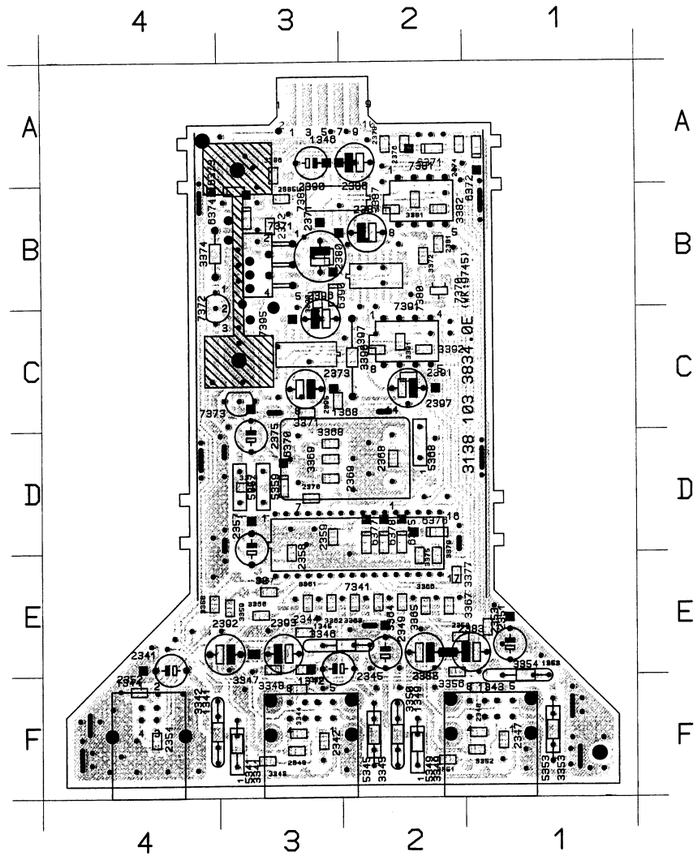
5359	D 3	3342	F 4	1343	F 1		
5368	D 2	3343	F 3	1344	F 4		
6370	D 3	3344	F 3	1345	E 3		
6371	A 2	3345	F 2	1346	A 3		
6372	A 1	3346	E 2	1349	F 2		
6373	B 3	3347	E 3	1353	F 1		
6374	B 3	3348	F 3	1388	D 2		
6375	E 2	3349	F 2	2341	E 4		
6376	D 2	3350	F 2	2342	F 3		
6377	E 2	3351	F 2	2343	F 3		
6378	E 2	3352	F 1	2344	E 3		
6390	B 3	3353	F 1	2345	E 2		
7341	D 3	3354	F 1	2346	E 3		
7370	B 2	3355	E 2	2347	F 1		
7371	B 3	3356	F 1	2348	F 1		
7372	B 4	3357	E 3	2349	E 2		
7373	C 3	3358	E 4	2350	E 1		
7380	B 2	3359	E 3	2351	E 1		
7381	A 2	3360	E 3	2352	F 4		
7385	A 2	3361	E 3	2353	E 1		
7391	C 2	3362	E 3	2354	F 4		
7395	C 3	3363	E 2	2357	E 3		
		3364	E 2	2358	D 3		
		3365	E 2	2359	D 3		
		3366	E 2	2368	D 2		
		3367	E 2	2369	D 3		
		3368	D 3	2370	D 3		
		3369	D 3	2371	B 3		
		3370	D 3	2372	B 3		
		3371	C 3	2373	C 3		
		3372	B 2	2374	A 2		
		3374	B 4	2375	D 3		
		3375	D 2	2376	A 2		
		3377	E 2	2378	A 2		
		3379	D 2	2380	B 3		
		3381	B 2	2381	B 2		
		3382	B 2	2382	E 2		
		3386	A 3	2383	E 1		
		3387	B 2	2385	B 3		
		3390	B 3	2386	A 2		
		3391	C 2	2387	B 2		
		3392	C 2	2390	A 3		
		3396	C 2	2391	C 2		
		3397	C 2	2392	E 4		
		5341	F 3	2393	E 3		
		5345	F 2	2395	C 3		
		5349	F 2	2396	C 3		



Key Control

1163

KEY CONTROL PANEL (39711/39731/014)

8249

1 AUDIO-MUTE → 1249

2 GREEN

3 AMBER

6291 L59YGC

4 OSD → 1248

5 → 1247 ENCODER (A, C, B)

6

7

8

TO MAIN PANEL 1213

1164

PWR SWITCH PANEL (39721/39731/014)

8198: 1, 2, 3

1199 XXXX: 1, 2, 3, 4, 5, 6

SW14: 4 → 1

5 → 2

SW2: 6 → 3

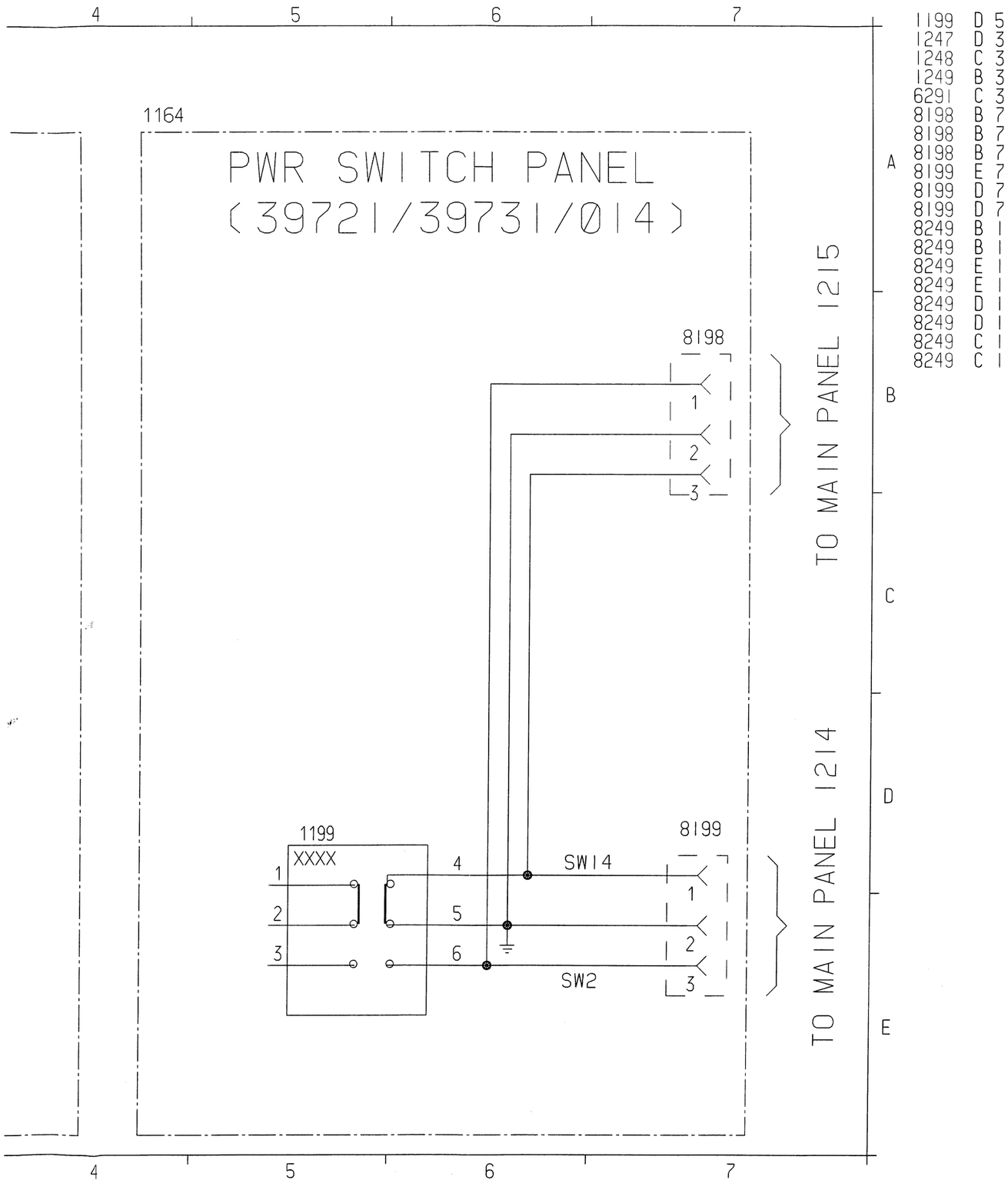
8199: 1, 2, 3

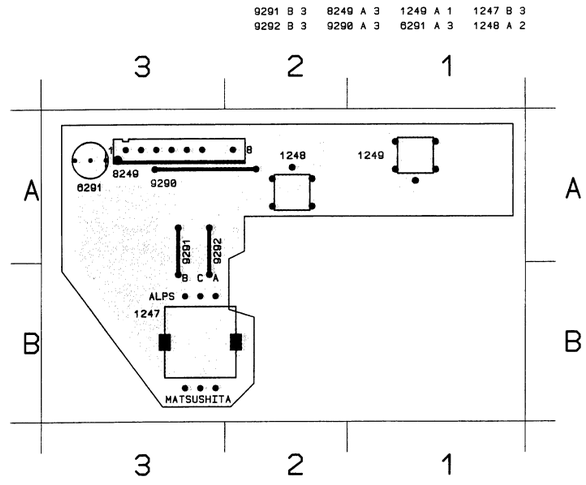
TO MAIN PANEL 1214

TO MAIN PANEL 1215

1199	D	5
1247	D	3
1248	C	3
1249	B	3
6291	C	3
8198	B	7
8198	B	7
8198	B	7
8199	E	7
8199	D	7
8199	D	7
8249	B	1
8249	B	1
8249	E	1
8249	E	1
8249	D	1
8249	D	1
8249	C	1
8249	C	1

Rotary Panel





Repair tips

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

1.1 General cautions on handling and storage
- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs
- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

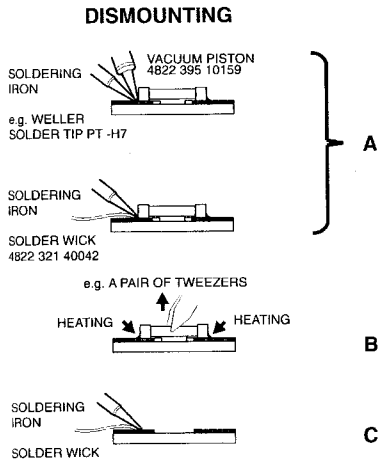


Fig. 1

- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

1.3 Caution on removal
- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs
- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

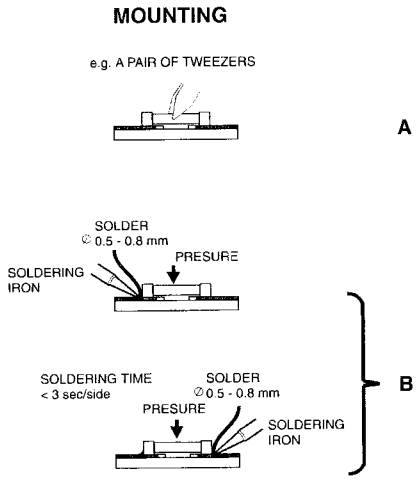


Fig. 2

2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

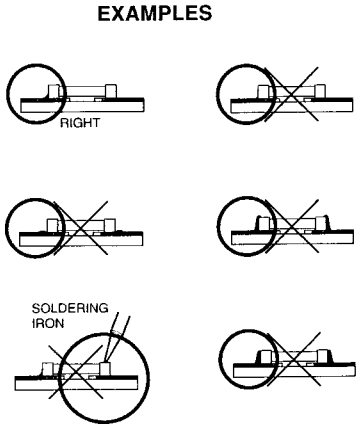
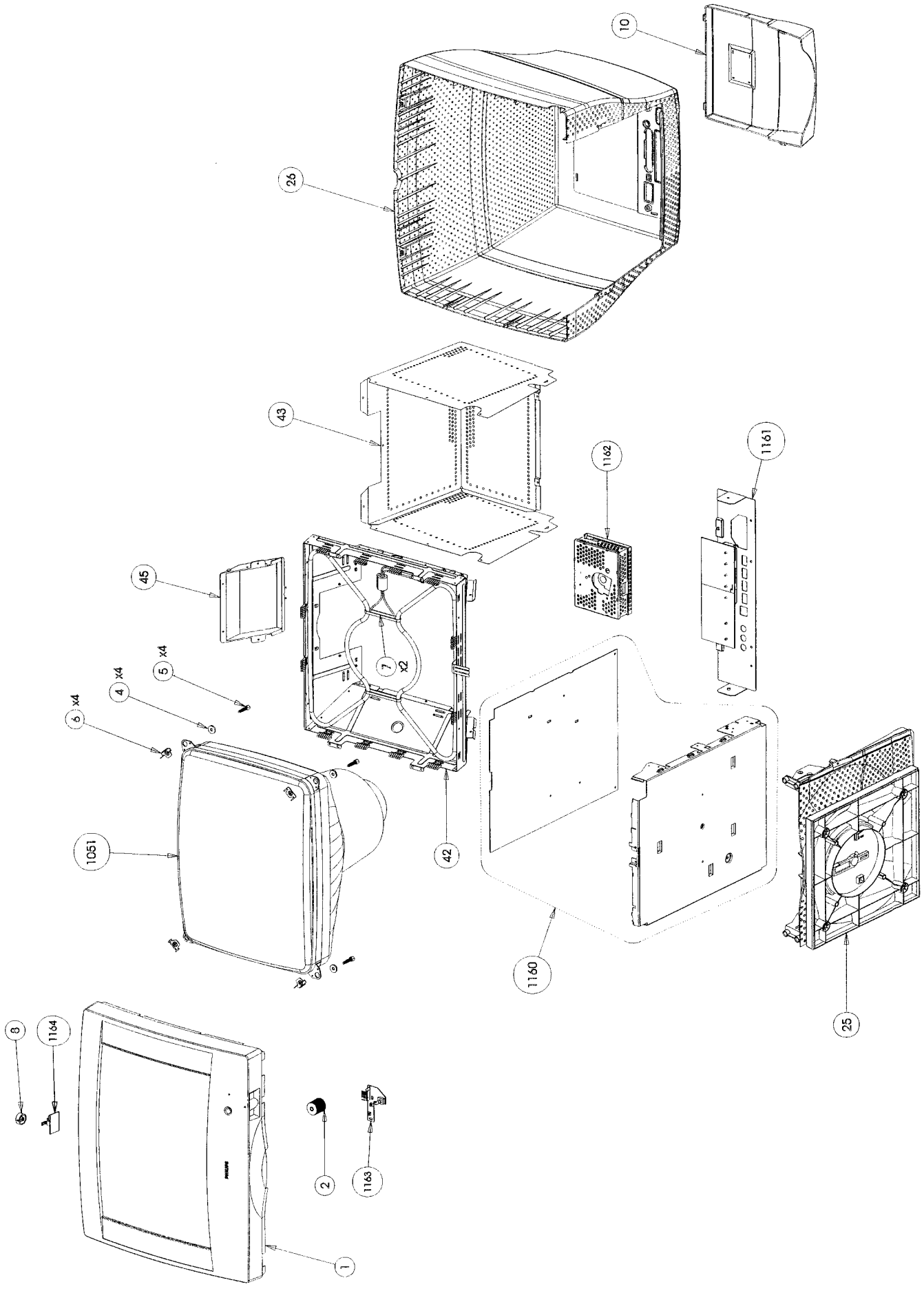


Fig. 3

Exploded View



Spare parts list

Parts indicated on exploded view: Model: 21A582BH/00C 21B582BH/00C

1	3138 107 95020	FRONT CAB. ASSY
	3138 104 40740	LENS
	3138 104 40750	FUNCTION KNOB
	3138 104 42680	LOCKER (L)
2	3138 104 40760	ROTARY KNOB
4	3138 101 63950	CRT MOUNTING WASHER
5	3138 100 41320	SCREW
6	3138 101 64480	CRT PLATE
8	3138 104 39380	POWER KNOB
	3138 104 40780	CABLE COVER
10	3138 107 95040	CABLE COVER ASS'Y
	3138 104 40990	NAME PLATE
25	3138 107 95030	BOTTOM PLATE ASS'Y
	3138 104 40670	BOTTOM PLATE
	3138 104 38270	SLIDER
	3138 104 39290	BASE - PEDESTAL
26	3138 104 40660	BACK COVER
	3138 104 41710	USB COVER
1051▲	4822 131 11292	CRT M51LEQ183X61(FU)
1160	3138 128 63680	MAN PCB ASSY (for 21B582BH/00C)
1160	3138 128 63730	MAN PCB ASSY (for 21A582BH/00C)
1162	3138 128 63690	VIDEO PCB ASSY
1163	3138 128 63700	ENCODER PCB ASSY
1164	4822 212 11701	DC SWITCH PCB ASSY
1170	3138 128 63720	TERMINAL PCB ASSY

Various

1055▲	3138 178 72110	DEGAUSSING COIL
	3138 106 51710	CARTON
	3138 106 51680	CUSHION -TOP LEFT
	3138 106 51690	CUSHION-TOP RIGHT
	3138 106 51700	CUSHION-BOTTOM
	4822 701 14028	P.E. BAG
	3138 117 01000	CD-ROM COLORIFIC
	3138 105 35610	D.F.U
	3138 105 35200	QUICK SET UP GUIDE
	3138 105 35330	QUICK SET UP GUIDE
	4822 265 11089	VGA ADP HD15/DB15(MAC, HIGH-END
	3138 105 34910	EUR. WARANTY BOOKLET
	4822 701 15012	P.E. BAG
	4822 701 20292	TAPPING SCREW WITH WASHER

Accessories

1115▲	4822 321 11297	MAINS CORD (SHIELDING)
1054	3138 178 71150	I/F CABLE

1160 Main Panel

Various

1160	3138 128 63680	MAN PCB ASSY (for 21B582BH/00C)
1160	3138 128 63730	MAN PCB ASSY (for 21A582BH/00C)
	4822 492 71337	SPRING (FUSE HOLDER)
	4822 701 20292	TAPPING SCREW WITH WASHER
	5322 390 20011	VET SILIC.P4 20GR
1101▲	4822 070 34002	FUSE, 218004.(4A)
1102▲	4822 280 70378	RELAY 2P 12V/60MA OMI-SS212 B
1103	3138 128 78430	AC INLET ASSY
1201	4822 267 10696	14P MALE (62511B)
1202	4822 242 10836	12.000 000 MHz
1213	4822 267 10742	7P. MALE
1214	4822 265 31209	3P
1216	4822 267 10704	8P FEMALE
	4822 466 93161	INSULATION PLATE
	4822 466 92891	INSULATING PLATE
	5322 390 20011	VET SILIC.P4 20GR
1291	5322 255 40958	8-DIP-S-LC
1293	4822 265 10672	42P FEM.
1591	4822 265 31231	3 P MALE
1901	4822 265 30891	2 P.

1266	3138 128 64700	EEPROM IC ASS'Y (for 21B582BH/00C)
1266	3138 128 64710	EEPROM IC ASS'Y (for 21A582BH/00C)

2104	4822 121 70446	220nF 20% 250V
2105	4822 121 10661	2.2nF 20% 400V
2106	4822 121 10661	2.2nF 20% 400V
2107	5322 121 44212	1µF 10% 275B
2111	4822 121 43641	470nF 5% 400V
2112	4822 121 43699	220nF 100V
2113	4822 121 43699	220nF 100V
2114	4822 124 80132	47µF 20% 25V
2115	4822 121 43695	47nF 10% 100V
2116	5322 122 32531	100pF 5% 50V
2117	4822 126 10453	50V
2118	4822 121 70547	1.5nF 5% 100V
2119	4822 124 22669	1µF 20% 50V
2120	4822 124 22669	1µF 20% 50V
2121	4822 121 43696	100nF 100V
2122	4822 121 10754	33NF 10% 400V

2123	4822 124 11517	450V 100U 20%
2124	4822 121 43696	100nF 100V
2125	4822 121 70357	22nF 10% 630V
2126	4822 121 70386	47nF 10% 250V
2127	4822 124 81186	47U 20% 20%
2128	4822 126 13196	100nF 10% **SMD** 25V
2129	4822 124 12112	1000µF 20% 10V
2130	4822 124 42145	100µF 20% 25V
2132	4822 124 12112	1000µF 20% 10V
2134	4822 124 12113	3300µF 20% 10V
2138▲	4822 126 14088	2.2nF 20% 250V
2141	4822 124 22669	1µF 20% 50V
2142	4822 121 43693	10nF 100V
2143	4822 124 40239	0.47µF 20% 63V
2144	5322 122 32311	470pF 10% 100V
2146	4822 126 14107	330nF +-80/20% 25V
2147	5322 122 32331	1nF 10% 100V
2148	4822 121 43696	100nF 100V
2149	4822 121 43913	470nF 10% 100V
2150	5322 122 32311	470pF 10% 100V
2154	4822 124 22678	100µF 20% 16V
2155	4822 124 42199	22µF 20% 50V
2157	4822 121 43908	47nF 10% 250V
2159	4822 121 43699	220nF 100V
2160	4822 126 13196	100nF 10% **SMD** 25V
2161	4822 126 12105	33nF 5% 63V
2163	4822 121 43908	47nF 10% 250V
2164	4822 121 10754	33NF 10% 400V

2165	4822 121 43699	220nF 100V
2166	4822 121 43696	100nF 100V
2167	4822 124 42359	47µF 100V
2168	4822 124 42149	220µF 20% 25V
2169	4822 124 42145	100µF 20% 25V
2170	4822 126 11103	10nF 5% 50V
2171	4822 121 43696	100nF 100V
2172▲	4822 126 14088	2.2nF 20% 250V
2173	4822 126 13196	100nF 10% **SMD** 25V
2181	4822 124 11941	100µF 20% 250V
2182	4822 124 11941	100µF 20% 250V
2185	4822 124 12034	220µF 20% 100V
2186	4822 122 32899	100pF 10%B 500V
2187	4822 124 11942	2200µF 20% 25V
2188	4822 122 32899	100pF 10%B 500V
2189	4822 124 11943	1000µF 20% 25V
2190	4822 122 32899	100pF 10%B 500V
2191	4822 124 81285	2200µF 20% 16V
2193	4822 124 40849	330µF 20% 16V
2194	4822 124 42199	22µF 20% 50V
2195	4822 124 23441	10µF 20% 50V
2196	4822 124 22669	1µF 20% 50V
2197	5322 122 31866	6.8nF 10% 63V
2198	5322 122 32336	560pF 10% 100V
2199	4822 126 14076	220N 25V. P8020
2201	4822 126 13196	100nF 10% **SMD** 25V
2202	5322 122 32143	22pF 100V
2203	5322 122 32143	22pF 100V
2204	4822 126 14076	220N 25V. P8020
2218	5322 124 41817	220µF 16V
2219	5322 122 32659	33pF 5% 50V
2220	5322 122 32659	33pF 5% 50V
2221	4822 124 22681	47µF 20% 16V
2222	4822 122 33575	220pF 5% 50V
2234	5322 122 32658	22pF 5% 50V
2236	5322 122 32658	22pF 5% 50V
2237	5322 122 32531	100pF 5% 50V
2239	4822 124 40433	47µF 20% 25V
2244	4822 124 23539	10µF 20% 50V
2245	4822 126 13196	100nF 10% **SMD** 25V
2252	4822 126 12944	47nF 10% 50V
2254	4822 126 12944	47nF 10% 50V
2316	4822 126 14076	220N 25V. P8020
2317	4822 126 13196	100nF 10% **SMD** 25V
2325	4822 124 80132	47µF 20% 25V
2331	4822 126 13196	100nF 10% **SMD** 25V
2332	5322 122 32531	100pF 5% 50V
2333	5322 122 32531	100pF 5% 50V
2401	4822 122 33575	220pF 5% 50V
2402	4822 124 42172	1000µF 16V
2403	5322 122 32658	22pF 5% 50V
2404	4822 126 13196	100nF 10% **SMD** 25V
2411	4822 121 43696	100nF 100V
2412	4822 121 10755	8.2NF 5% 100V

2413	4822 126 13606	10N 2% 100V
2414	4822 122 32646	5.6nF 10% 50V
2415	4822 121 43696	100nF 100V
2416	4822 121 70312	150nF 10% 100V
2417	4822 121 70631	3.3nF 2.5% 100V
2418	4822 126 12944	47nF 10% 50V
2419	5322 122 32268	470pF 10% 50V
2423	4822 126 12944	47nF 10% 50V
2424	4822 124 42199	22µF 20% 50V
2425	4822 124 23441	10µF 20% 50V
2436	4822 121 70411	220nF 5% 250V
2437	4822 124 42145	100µF 20% 25V
2438	4822 122 33575	220pF 5% 50V
2441	5322 122 32531	100pF 5% 50V
2442	4822 126 13196	100nF 10% **SMD** 25V
2451	4822 124 22681	47µF 20% 16V
2452	5322 122 34123	1nF 10% 50V
2454	4822 121 43696	100nF 100V
2501	4822 124 42144	470µF 63V
2502	4822 124 22336	100µF 20% 40V
2503	4822 126 14106	220pF 5% 50V
2504	4822 121 43693	10nF 100V
2509	4822 121 43913	470nF 10% 100V
2510	4822 124 42144	470µF 63V
2519	4822 124 23539	10µF 20% 50V
2527	4822 124 22675	1µF 20% 160V
2528	4822 124 22675	1µF 20% 160V
2529	4822 126 13035	220pF 10% 2KV
2530	4822 126 13035	220pF 10% 2KV
2532	4822 121 10756	3.6NF 2% 2KV
2531	4822 121 43364	10nF 10% 400V

2533	4822 126 10783	100pF 5% 2KV
2536	4822 124 22681	47µF 20% 16V
2537	4822 121 43918	100nF 10% 400V
2538	4822 124 80834	100µF 20% 250V
2539	4822 122 33646	470pF 10% 500V
2541	4822 124 22681	47µF 20% 16V
2542	4822 124 22681	47µF 20% 16V
2554	4822 122 33968	1nF 5% 500V
2555	4822 121 43913	470nF 10% 100V
2557	4822 124 42145	100µF 20% 25V
2558	4822 124 42145	100µF 20% 25V
2559	4822 121 43696	100nF 100V
2590	4822 121 43696	100nF 100V
2593	4822 124 80132	47µF 20% 25V
2595	4822 124 80132	47µF 20% 25V
2596	4822 121 43696	100nF 100V
2601	4822 124 42199	22µF 20% 50V
2602	4822 121 43696	100nF 100V
2603	4822 124 23539	10µF 20% 50V
2604	4822 126 10453	50V
2605	4822 121 70162	10nF 5% 400V
2606	4822 122 33177	10nF 20% 50V
2607	4822 126 11099	100pF 5% 50V
2608	5322 122 32331	1nF 10% 100V
2609	4822 126 10453	50V
2611	4822 126 13196	100nF 10% **SMD** 25V
2614	4822 122 33891	3.3nF 10% 63V
2618	4822 121 43697	330nF 10% 100V
2619	4822 124 42357	33µF 25V
2623	4822 124 22681	47µF 20% 16V
2627	4822 124 42161	33µF 20% 250V
2630	4822 121 40336	47nF 10% 250V
2631	4822 126 11254	330pF 10% 2KV
2632	4822 124 42161	33µF 20% 250V
2633	4822 121 70492	2.2nF 5% 630V
2634	4822 121 70492	2.2nF 5% 630V
2636	4822 124 80132	47µF 20% 25V
2639	4822 121 70439	2.2nF 5% 100V
2641	4822 121 10706	22nF 5% 100V
2642	4822 121 41893	3.9µF 10% 100V
2645	4822 126 13134	1nF 10% 1KV
2646	4822 121 40336	47nF 10% 250V
2648	4822 124 41659	4.7µF 20% 25V
2651	4822 126 14413	270pF 10% 2KV
2653	4822 126 13134	1nF 10% 1KV
2654	4822 126 13134	1nF 10% 1KV
2656	4822 126 12651	10nF 20% 2K
2657	4822 126 12651	10nF 20% 2K
2660	4822 126 13196	100nF 10% **SMD** 25V
2661	5322 122 32531	100pF 5% 50V
2662	4822 124 80132	47µF 20% 25V
2665	4822 124 40246	4.7µF 20% 63V
2671	4822 121 70203	680nF 250V
2672	4822 121 43681	330nF 250V
2673	4822 121 70679	180N 5% 400V
2674	4822 121 70678	180N 5% 400V
2675	4822 121 40336	47nF 10% 250V
2676	4822 121 70504	1.5µF 5% 250V
2681	5322 121 42662	6nF 5% 250V (for 21B582BH/00C only)
2682	5322 121 42662	6nF 5% 250V (for 21B582BH/00C only)
2683	4822 121 70598	8nF 5% 400V
2901	4822 121 40336	47nF 10% 250V
2902	4822 126 14084	47nF 20% 250V
2903	4822 126 14133	1nF 20% 250V
2904	5322 122 34123	1nF 10% 50V

3101	4822 053 21474	470k 5% 0.5W
3102	4822 116 30469	5Ω 15%
3106	4822 050 21205	1Ω2 1% 0.6W
3107	4822 050 23304	330k 1% 0.6W
3108	4822 050 23303	33k 1% 0.6W
3109	4822 050 25104	50k 1% 0.6W
3110	4822 050 25104	50k 1% 0.6W
3111	4822 050 21204	120k 1% 0.6W
3112	4822 051 20105	1Ω 5% 0.1W
3113	4822 050 24708	4Ω7 1% 0.6W
3114	4822 050 21202	12Ω 1% 0.6W
3115	4822 050 21202	12Ω 1% 0.6W
3117	4822 050 11003	1k 1% 0.4W
3118	4822 050 21203	1k 1% 0.6W
3119	4822 050 21202	12Ω 1% 0.6W
3120	4822 117 10313	3k 5% 0.5W
3121▲	4822 052 11479	4Ω 5% 0.5W
3122	4822 050 22203	2k 1% 0.6W
3123	4822 051 20478	4Ω7 5% 0.1W
3124	4822 117 10403	2Ω 2W
3125	4822 050 21303	1k 1% 0.6W

Spare parts list

3126	4822 050 22003	20k 1% 0.6W
3127	4822 050 24704	470k 1% 0.6W
3128	4822 050 24704	470k 1% 0.6W
3129	4822 050 29104	910k 1% 0.6W
3130	4822 050 29104	910k 1% 0.6W
3131	4822 117 11744	0Ω22 5% 1W
3132	4822 117 11744	0Ω22 5% 1W
3133	4822 117 11744	0Ω22 5% 1W
3134	5322 116 51882	0Ω jumper FR25)
3136	4822 050 21004	100k 1% 0.6W
3137	4822 050 24708	4Ω7 1% 0.6W

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3139	4822 050 21002	1k 1% 0.6W
3140	4822 050 23301	330Ω 1% 0.6W
3141	4822 050 21501	150Ω 1% 0.6W
3142	4822 050 24702	4k7 1% 0.6W
3143	4822 050 23901	390Ω 1% 0.6W
3144	4822 050 25602	5k6 1% 0.6W
3145	4822 050 25601	560Ω 1% 0.6W
3146	4822 050 11003	10k 1% 0.4W
3147	4822 050 21002	1k 1% 0.6W
3148	4822 117 10833	10k 1% 0.1W
3149	4822 117 10833	10k 1% 0.1W
3150	4822 050 21004	100k 1% 0.6W
3151	4822 050 24703	47k 1% 0.6W
3152	4822 050 22709	27Ω 1% 0.6W
3153	4822 050 22204	220k 1% 0.6W
3154	4822 050 23303	33k 1% 0.6W
3155	4822 050 21002	1k 1% 0.6W
3156	4822 117 12672	0Ω22 55 2W
3157	4822 117 11973	15k 5% 1W
3158	4822 117 10833	10k 1% 0.1W
3159	4822 051 20684	680k 5% 0.1W
3160	4822 050 22709	27Ω 1% 0.6W
3161	4822 050 11003	10k 1% 0.4W
3162	4822 050 24702	4k7 1% 0.6W
3163	4822 117 11973	15k 5% 1W
3166	4822 050 22709	27Ω 1% 0.6W
3168	4822 050 24702	4k7 1% 0.6W
3169	4822 117 12671	0Ω33 5% 5W
3170	4822 053 10108	1Ω 5% 1W
3171	4822 117 10834	47k 1% 0.1W
3172	4822 050 11003	10k 1% 0.4W
3173	4822 117 10833	10k 1% 0.1W
3174	4822 050 22704	270k 1% 0.6W
3175	4822 050 24303	43k 1% 0.6W
3176	4822 050 21502	1k5 1% 0.6W
3181	4822 117 12755	120k 1%
3182	4822 050 24703	47k 1% 0.6W
3183	4822 050 21808	1Ω8 1% 0.6W
3188	4822 051 20474	470k 5% 0.1W
3189	4822 050 24702	4k7 1% 0.6W
3190	4822 051 20224	220k 5% 0.1W
3191	4822 050 23301	330Ω 1% 0.6W
3192	4822 050 21204	120k 1% 0.6W
3193	4822 051 20102	1k 5% 0.1W
3194	4822 101 11743	500Ω LIN CERMET
3195	4822 050 21202	1k2 1% 0.6W
3196	4822 117 11507	6k8 1% 0.1W
3197	4822 050 21002	1k 1% 0.6W
3199	4822 051 20008	0Ω JUMP. (**SMD**)
3201	4822 050 21003	10k 1% 0.6W
3202	4822 050 21003	10k 1% 0.6W
3203	4822 051 20332	3k3 5% 0.1W
3204	4822 051 20332	3k3 5% 0.1W
3205	4822 117 10833	10k 1% 0.1W
3206	4822 050 21001	100Ω 1% 0.6W
3207	4822 050 21001	100Ω 1% 0.6W
3209	4822 051 20102	1k 5% 0.1W
3210	4822 117 10833	10k 1% 0.1W
3211	4822 051 20008	0Ω JUMP. (**SMD**)
3216	4822 051 20472	4k7 5% 0.1W
3217	4822 050 22201	220Ω 1% 0.6W
3218	5322 116 51882	0Ω jumper FR25)
3219	5322 116 51882	0Ω jumper FR25)
3220	4822 117 10834	47k 1% 0.1W
3221	4822 050 22201	220Ω 1% 0.6W
3222	4822 050 22201	220Ω 1% 0.6W
3223	4822 050 11003	10k 1% 0.4W
3224	4822 050 11003	10k 1% 0.4W
3225	4822 050 11003	10k 1% 0.4W
3226	4822 117 10833	10k 1% 0.1W
3227	4822 050 21003	10k 1% 0.6W
3229	4822 050 24701	470Ω 1% 0.6W
3230	4822 050 21001	100Ω 1% 0.6W
3231	4822 050 21001	100Ω 1% 0.6W
3232	5322 116 51882	0Ω jumper FR25)
3234	4822 051 20332	3k3 5% 0.1W
3235	4822 051 20101	100Ω 5% 0.1W
3236	4822 051 20332	3k3 5% 0.1W
3237	4822 050 21001	100Ω 1% 0.6W
3238	4822 051 20472	4k7 5% 0.1W
3239	4822 050 23303	33k 1% 0.6W
3240	4822 050 21001	100Ω 1% 0.6W
3241	4822 051 20101	100Ω 5% 0.1W
3242	4822 050 21001	100Ω 1% 0.6W
3243	4822 051 20008	0Ω JUMP. (**SMD**)
3244	4822 051 20822	8k2 5% 0.1W
3246	4822 050 24702	4k7 1% 0.6W
3247	4822 051 20101	100Ω 5% 0.1W
3248	4822 051 20472	4k7 5% 0.1W
3249	4822 050 24702	4k7 1% 0.6W
3250	4822 117 10833	10k 1% 0.1W
3251	4822 050 24702	4k7 1% 0.6W
3252	4822 050 22201	220Ω 1% 0.6W
3253	4822 050 24702	4k7 1% 0.6W
3254	4822 050 22201	220Ω 1% 0.6W
3255	4822 050 21503	15k 1% 0.6W
3256	4822 051 20472	4k7 5% 0.1W
3257	4822 117 11504	270Ω 1% 0.1W
3258	4822 051 20121	120Ω 5% 0.1W
3259	4822 051 20332	3k3 5% 0.1W
3260	4822 050 22203	22k 1% 0.6W
3261	4822 050 21001	100Ω 1% 0.6W
3262	4822 050 21001	100Ω 1% 0.6W
3263	4822 050 21001	100Ω 1% 0.6W
3264	4822 050 21001	100Ω 1% 0.6W
3265	4822 051 20008	0Ω JUMP. (**SMD**)
3316	4822 051 20472	4k7 5% 0.1W
3317	4822 051 20472	4k7 5% 0.1W
3318	4822 051 20154	150k 5% 0.1W
3321	4822 051 20472	4k7 5% 0.1W
3323	4822 050 21002	1k 1% 0.6W
3324	4822 117 11449	2k2 1% 0.1W
3325▲	4822 052 10478	4Ω7 5% 0.33W
3331	4822 051 20101	100Ω 5% 0.1W
3332	4822 117 10834	47k 1% 0.1W
3333	4822 117 10834	47k 1% 0.1W
3334	4822 051 20101	100Ω 5% 0.1W
3335	4822 051 20101	100Ω 5% 0.1W
3401	4822 051 20471	470Ω 5% 0.1W
3402	4822 050 24701	470Ω 1% 0.6W
3403	4822 050 21001	100Ω 1% 0.6W
3404	4822 117 10833	10k 1% 0.1W
3405	4822 050 21001	100Ω 1% 0.6W
3406	4822 050 21001	100Ω 1% 0.6W
3408	4822 050 24701	470Ω 1% 0.6W
3409	4822 050 22202	2k2 1% 0.6W
3410	4822 117 11449	2k2 1% 0.1W
3411	4822 051 20332	3k3 5% 0.1W
3412	4822 050 25101	510Ω 1% 0.6W
3413	4822 050 22702	2k7 1% 0.6W
3414	4822 050 24702	4k7 1% 0.6W
3415	4822 116 52257	22k 5% 0.5W
3416	4822 051 20472	4k7 5% 0.1W
3417	4822 050 26803	68k 1% 0.6W
3418	4822 050 22204	220k 1% 0.6W
3419	4822 050 26803	68k 1% 0.6W
3421	4822 117 11383	12k 1% 0.1W
3422	4822 117 11449	2k2 1% 0.1W
3423	4822 051 20124	120k 5% 0.1W
3424	4822 051 20008	0Ω JUMP. (**SMD**)
3425	4822 050 24708	4Ω7 1% 0.6W
3426	4822 117 11449	2k2 1% 0.1W
3427	4822 051 20472	4k7 5% 0.1W
3428	4822 117 10833	10k 1% 0.1W
3429	4822 117 10833	10k 1% 0.1W
3436	4822 050 26802	6k8 1% 0.6W
3437	4822 117 10833	10k 1% 0.1W
3438	4822 050 21503	15k 1% 0.6W
3439	4822 051 20472	4k7 5% 0.1W
3440▲	4822 052 10828	8Ω2 5% 0.33W
3441	4822 117 11449	2k2 1% 0.1W
3442	4822 117 11449	2k2 1% 0.1W
3443	4822 117 11449	2k2 1% 0.1W
3444	4822 117 10833	10k 1% 0.1W
3445	4822 116 82046	2k2 5% 1/6W
3446	4822 117 10833	10k 1% 0.1W
3447	4822 117 10833	10k 1% 0.1W
3449▲	4822 052 10478	4Ω7 5% 0.33W
3450	4822 051 20472	4k7 5% 0.1W
3451	4822 050 24702	4k7 1% 0.6W
3453	4822 117 11503	220Ω 1% 0.1W
3454	4822 117 10834	47k 1% 0.1W
3455	4822 050 21504	150k 1% 0.6W
3456	4822 050 24703	47k 1% 0.6W
3457	4822 050 21003	10k 1% 0.6W
3458	4822 050 21005	1M 1% 0.6W
3459	4822 050 23302	3k3 1% 0.6W
3460	4822 050 24703	47k 1% 0.6W
3501▲	4822 052 11228	2Ω2 5% 0.5W
3502	4822 050 22202	2k2 1% 0.6W
3503	4822 050 24701	470Ω 1% 0.6W
3504	4822 050 24701	470Ω 1% 0.6W
3505	4822 050 22202	2k2 1% 0.6W
3506	4822 050 21808	1Ω8 1% 0.6W
3507	4822 050 21808	1Ω8 1% 0.6W
3508	4822 050 24701	470Ω 1% 0.6W
3509	4822 050 22208	2Ω2 1% 0.6W
3510▲	4822 052 11228	2Ω2 5% 0.5W
3517	4822 051 20472	4k7 5% 0.1W
3518	4822 051 20223	22k 5% 0.1W
3519	4822 051 20223	22k 5% 0.1W
3533	4822 050 21501	150Ω 1% 0.6W
3534	4822 050 24709	47Ω 1% 0.6W
3535▲	4822 117 10833	10k 1% 0.1W
3536	4822 052 11279	27Ω 5% 0.5W
3537	4822 117 13284	390Ω 7W
3538	4822 117 13285	2k2 3W
3540▲	4822 052 10828	8Ω2 5% 0.33W
3541	4822 050 24709	47Ω 1% 0.6W
3542	4822 050 21003	10k 1% 0.6W
3543	4822 050 21202	1k2 1% 0.6W
3544▲	4822 052 11108	1Ω 5% 0.5W
3545	4822 117 10442	10Ω 5%
3546	4822 117 12941	33Ω 5% 7W
3547	4822 117 13081	68Ω 1% 0.5W
3548▲	4822 052 10108	1Ω 5% 0.33W
3549▲	4822 052 10108	1Ω 5% 0.33W
3550	4822 050 26801	680Ω 1% 0.6W
3551	4822 100 11141	10k 30%lin 0.1W
3552	4822 050 26801	680Ω 1% 0.6W
3553	4822 117 12675	150Ω 5% 5W
3554	4822 050 24701	470Ω 1% 0.6W
3555	4822 117 12675	150Ω 5% 5W
3556	4822 050 24701	470Ω 1% 0.6W
3557	4822 050 23909	39Ω 1% 0.6W
3558▲	4822 052 11828	8Ω2 5% 0.5W
3559	4822 050 24701	470Ω 1% 0.6W
3560▲	4822 052 11828	8Ω2 5% 0.5W
3561	4822 050 23909	39Ω 1% 0.6W
3562	4822 050 21001	100Ω 1% 0.6W
3563	4822 050 21203	12k 1% 0.6W
3564	4822 050 22702	2k7 1% 0.6W
3565	4822 117 13286	2Ω2 5W
3566	4822 117 11383	12k 1% 0.1W
3567	4822 050 24708	4Ω7 1% 0.6W
3568	4822 050 21002	1k 1% 0.6W
3589	4822 050 24708	4Ω7 1% 0.6W
3591	4822 050 11003	10k 1% 0.4W
3592	4822 050 21203	12k 1% 0.6W
3593▲	4822 052 10479	47Ω 5% 0.33W
3594	4822 050 11003	10k 1% 0.4W
3595▲	4822 052 10479	47Ω 5% 0.33W
3596	4822 050 24701	470Ω 1% 0.6W
3597	4822 050 22209	22Ω 1% 0.6W
3598	4822 050 22202	2k2 1% 0.6W
3599	4822 050 23303	33k 1% 0.6W
3600	4822 117 10834	47k 1% 0.1W
3601	4822 050 22202	2k2 1% 0.6W
3602	4822 117 12755	120k 1%
3603	4822 050 21004	100k 1% 0.6W
3604	4822 050 28202	8k2 1% 0.6W
3605	4822 050 22709	27Ω 1% 0.6W
3607	4822 050 11003	10k 1% 0.4W
3608	4822 051 20154	150k 5% 0.1W
3609	4822 051 20472	4k7 5% 0.1W
3611	4822 050 28201	820Ω 1% 0.6W
3612	4822 051 20562	5k6 5% 0.1W **SMD**
3613	4822 050 22201	220Ω 1% 0.6W
3614	4822 116 52257	22k 5% 0.5W
3615	4822 116 52257	22k 5% 0.5W
3616	4822 050 11003	10k 1% 0.4W
3617	4822 050 21002	1k 1% 0.6W
3618	4822 117 10834	47k 1% 0.1W
3619	4822 050 21004	100k 1% 0.6W
3620	4822 050 25603	56k 1% 0.6W
3621	4822 050 25103	51k 1% 0.6W
3622	4822 101 11741	20k LIN CERMET
3623▲	4822 052 10478	4Ω7 5% 0.33W
3624	4822 051 20102	1k 5% 0.1W
3625	4822 050 22202	2k2 1% 0.6W
3626▲	4822 052 10478	4Ω7 5% 0.33W
3627	4822 050 21005	1M 1% 0.6W
3630	4822 053 21224	220k 5% 0.5W
3631	4822 117 11622	270k 5% 0.5W
3632	4822 117 11531	39Ω 5% 2W
3633	4822 050 21003	10k 1% 0.6W
3634▲	4822 052 11109	10Ω 5% 0.5W
3635	4822 050 24701	470Ω 1% 0.6W
3636▲	4822 052 11828	8Ω2 5% 0.5W
3637	4822 050 21001	100Ω 1% 0.6W
3638	4822 050 24701	470Ω 1% 0.6W
3639	4822 050 11003	10k 1% 0.4W
3640▲	4822 117 10442	10Ω 5%
3641	4822 050 21201	120Ω 1% 0.6W
3642	4822 050 21005	1M 1% 0.6W
3643	4822 050 26203	62k 1% 0.6W
3644	4822 101 11742	50k LIN CERMET
3645	4822 053 21104	100k 5% 0.5W
3646	4822 117 11635	1k 0.5W
3647	4822 100 11585	22k 30%LIN 0.1W
3648	4822 117 10833	10k 1% 0.1W
3649	4822 050 22702	2k7 1% 0.6W
3650	4822 050 21203	12k 1% 0.6W
3651	4822 053 21224	220k 5% 0.5W
3652	4822 111 50617	2k2 10% 0.5W
3653	4822 053 21104	100k 5% 0.5W
3654	4822 050 25602	5k6 1% 0.6W
3655	4822 117 10118	1M 5% 0.5W
3656	4822 117 10118	1M 5% 0.5W
3657	4822 050 21502	1k5 1% 0.6W
3658	4822 050 23302	3k3 1% 0.6W
3659	4822 050 21002	1k 1% 0.6W
3660	4822 050 23903	39k 1% 0.6W
3661	4822 050 24701	470Ω 1% 0.6W
3662	4822 051 20223	22k 5% 0.1W
3663	4822 051 20104	100k 5% 0.1W
3664	4822 117 10118	1M 5% 0.5W
3665	4822 051 20302	3k 5% 0.1W
3666	4822 050 21002	1k 1% 0.6W
3671	4822 051 20104	100k 5% 0.1W
3672	4822 051 20104	100k 5% 0.1W
3673	4822 051 20104	100k 5% 0.1W
3674	4822 051 20104	100k 5% 0.1W
3675	4822 051 20104	100k 5% 0.1W
3676	4822 051 20104	100k 5% 0.1W
3677	4822 051 20008	0Ω JUMP. (**SMD**)
3678	4822 051 20008	0Ω JUMP. (**SMD**)
3679	4822 051 20008	0Ω JUMP. (**SMD**)
3680	4822 051 20008	0Ω JUMP. (**SMD**)
3681	4822 051 20008	0Ω JUMP. (**SMD**)
3685	4822 050 22202	2k2 1% 0.6W
3686	4822 050 11003	10k 1% 0.4W
3687	4822 050 11003	10k 1% 0.4W
3688	4822 050 11003	10k 1% 0.4W
3689	4822 050 11003	10k 1% 0.4W
3690	4822 050 11003	10k 1% 0.4W
3691	4822 050 11003	10k 1% 0.4W
3901	4822 116 21237	1M A/100V
3902	4822 116 40144	12Ω
3911	4822 051 20109	10Ω 5% 0.1W
3912	4822 050 24702	4k7 1% 0.6W
3913	4822 116 82046	2k2 5% 1/6W
3914	4822 051 20102	1k 5% 0.1W
3916	4822 050 24701	470Ω 1% 0.6W

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5101	4822 157 71663	LINE TER
5102	4822 157 71663	LINE TER
5103	4822 526 10522	IND FXD BEAD EMI 0.7U B
5104	4822 526 10522	IND FXD BEAD EMI 0.7U B
5105	4822 526 10522	IND FXD BEAD EMI 0.7U B
5106	4822 526 10522	IND FXD BEAD EMI 0.7U B
5111	3138 178 72070	PFC CHOKE
5112	3138 178 72130	T CORE
5136	3138 128 78010	USB TRANSFORMER
5161	3138 128 73760	DRIVER TRANSFORMER
5162▲	3138 178 72170	POWER TRANSFORMER ETD 49
5221	4822 157 53189	CHOKE COIL 5.0µH PM10
5222	4822 157 53189	CHOKE COIL 5.0µH PM10
5506	4822 157 71419	H SHIFT CHOKE COIL
5507	4822 157 11201	PUNK HEAD CHOKE
5523	4822 146 10737	HOR.CENTERING TRANSF.
5524	4822 142 40349	H/DRV XFMR
5525	4822 157 71372	CHOCK COIL 20µH
5526	4822 526 10522	IND FXD BEAD EMI 0.7U B
5528	3138 178 72090	LINEARITY COIL
5529	3138 178 72090	LINEARITY COIL
5532	4822 526 10522	IND FXD BEAD EMI 0.7U B
5632	4822 157 71372	CHOCK COIL 20µH
5638▲	3138 178 72100	L.O.T.
5651	4822 146 10738	DAF TRANSFORMER

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6101	4822 130 10741	GBU6J

Spare parts list

6111	4822 130 80572	RGP30J
6112	4822 130 10746	31DF6
6115	5322 130 10709	BYM26C
6116	4822 130 34173	BZX79-B5V6
6120	4822 130 34499	BZX79-B20
6121	4822 130 80446	BAS32L
6130	4822 130 34488	BZX79-B11
6131	4822 130 34488	BZX79-B11
6132	4822 130 10742	UF4004
6133	4822 130 10742	UF4004
6134	4822 130 30621	1N4148
6135	5322 130 80282	P6KE180A
6136	4822 130 32343	BYV26C
6138	5322 130 81917	SB140
6139	5322 130 81917	SB140
6140	4822 130 32715	SB340
6141	4822 130 30621	1N4148
6142	4822 130 34173	BZX79-B5V6
6143	4822 130 30621	1N4148
6145	4822 130 80446	BAS32L
6146	4822 130 30862	BZX79-B9V1
6161	4822 130 34499	BZX79-B20
6162	4822 130 10742	UF4004
6163	4822 130 10742	UF4004
6167	4822 130 34499	BZX79-B20
6170	4822 130 10742	UF4004
6172	4822 130 10742	UF4004
6173	4822 130 10742	UF4004
6174	4822 130 10742	UF4004
6181	4822 130 10746	31DF6
6182	4822 130 10746	31DF6
6183	4822 130 10746	31DF6
6184	4822 130 10746	31DF6
6186	4822 130 11113	31DF4-FC5
6187	4822 130 41601	BYV95A
6188	4822 130 83909	BYW98-200RL
6189	4822 130 10742	UF4004
6190	4822 130 10835	UG4B
6191	4822 130 80446	BAS32L
6193	4822 130 30621	1N4148
6194	4822 130 30621	1N4148
6196	4822 130 30621	1N4148
6197	4822 130 30621	1N4148
6201	5322 130 34337	BAV99
6202	4822 130 80446	BAS32L
6203	4822 130 80446	BAS32L
6204	4822 130 80446	BAS32L
6205	4822 130 80446	BAS32L
6206	4822 130 80446	BAS32L
6207	4822 130 80446	BAS32L
6220	4822 130 80446	BAS32L
6221	5322 130 31504	BZX79-B3V3
6243	4822 130 80446	BAS32L
6244	4822 130 80446	BAS32L
6255	4822 130 80446	BAS32L
6256	4822 130 30621	1N4148
6317	4822 130 80446	BAS32L
6318	4822 130 80446	BAS32L
6401	4822 130 30621	1N4148
6402	4822 130 30621	1N4148
6403	4822 130 80446	BAS32L
6404	4822 130 30621	1N4148
6405	4822 130 80446	BAS32L
6406	4822 130 80446	BAS32L
6407	4822 130 80446	BAS32L
6408	4822 130 30621	1N4148
6409	4822 130 80446	BAS32L
6411	5322 130 81917	SB140
6436	4822 130 30621	1N4148
6437	4822 130 34328	BZX79-B30
6454	4822 130 34233	BZX79-B5V1
6455	4822 130 30621	1N4148
6501	5322 130 31969	RGP15M
6519	4822 130 80446	BAS32L
6522	4822 130 42489	BYD33G
6523	4822 130 31607	RGP10D
6524	5322 130 32184	BYV27-50
6534	4822 130 10826	DD50R
6535	4822 130 34197	BZX79-B12
6539	4822 130 11113	31DF4-FC5
6542	4822 130 30621	1N4148
6548	4822 130 31607	RGP10D
6549	4822 130 31607	RGP10D
6553	4822 130 60815	BYV26E
6601	4822 130 31607	RGP10D
6603	4822 130 80446	BAS32L
6605	4822 130 80446	BAS32L
6606	4822 130 80446	BAS32L
6607	4822 130 30621	1N4148
6608	4822 130 80446	BAS32L
6611	4822 130 34233	BZX79-B5V1
6613	4822 130 80446	BAS32L
6617	4822 130 80446	BAS32L
6618	4822 130 80446	BAS32L
6620	4822 130 80446	BAS32L
6626	4822 130 31393	BYT52J
6632	4822 130 10746	31DF6
6638	4822 130 30621	1N4148
6642	4822 130 34685	BZX79-B75
6655	4822 130 60815	BYV26E
6656	5322 130 32274	BY584
6657	5322 130 32274	BY584
6662	4822 130 34197	BZX79-B12
6675	4822 130 30621	1N4148
6676	4822 130 34233	BZX79-B5V1
6677	4822 130 30621	1N4148
6904	4822 130 31438	1N4001G

7111	4822 209 16121	L4981A
7112	4822 130 11117	STU14NA50
	5322 390 20011	VET SILIC.P4 20GR
7131	4822 130 11233	TOP224Y
7132	4822 209 13061	L4940V5
7133	4822 130 40995	BD438
7134	4822 130 10829	MUN2211J
7144	4822 209 16097	L4990
7146	4822 209 70672	LM358N SEL.
7162	4822 130 10831	STP10NA40
7168	4822 130 10831	STP10NA40
	5322 390 20011	VET SILIC.P4 20GR
7172▲	4822 130 80908	CNX62A
7181	4822 209 81726	MC7812CT
	5322 390 20011	VET SILIC.P4 20GR
7186	4822 209 81397	TL431CLPST
7187	4822 130 10829	MUN2211J
7188	4822 130 42513	BC858C
7189	4822 209 81397	TL431CLPST
7201		This is an empty IC, please refer to item "1266" for spare parts ordering.
7203	4822 209 16417	P83C380AER/016
7257	5322 130 60068	BC558C
7258	4822 130 44196	BC548C
7259	5322 130 42136	BC848C
7317	5322 130 42136	BC848C
7318	4822 130 41594	PH2369
7319	4822 130 41594	PH2369
7331	4822 209 15121	ST24LC21B1
7401	9352 608 03112	TDA4854/V2
7409	4822 209 73852	PMBT2369
7416	5322 130 42136	BC848C
7417	4822 130 41344	BC337-40
7418	4822 130 40854	BC327
7436	4822 130 44461	BC546B
7441	5322 130 42136	BC848C
7442	5322 130 60068	BC558C
7452	4822 130 10829	MUN2211J
7453	5322 130 60068	BC558C
7454	4822 130 41646	BF423
7455	4822 130 41782	BF422
7456	5322 130 42136	BC848C
7501	4822 209 31472	TDA8179S
	4822 492 62076	FOR TRANSISTORS
	4822 466 11509	INSULATING PLATE
	5322 390 20011	VET SILIC.P4 20GR
7518	4822 130 44196	BC548C
7525	4822 130 63081	BSN254A
7526	4822 130 10811	2SC3998
	4822 492 62076	FOR TRANSISTORS
	4822 466 93161	INSULATION PLATE
	4822 466 11509	INSULATING PLATE
	5322 390 20011	VET SILIC.P4 20GR
7540	4822 130 44121	BC338
7541	4822 130 44104	BC328
7542	5322 130 42136	BC848C
7543	4822 130 10788	MTP5P25
	5322 390 20011	VET SILIC.P4 20GR
7550	4822 130 63274	2SC2344E
7551	4822 130 63275	2SA1011E
7555	4822 209 70672	LM358N SEL.
7557	4822 130 63427	BD534FI
7558	5322 130 42631	BD243
7591	4822 209 70672	LM358N SEL.
7592	4822 130 41053	BC639
7593	4822 130 41087	BC638
7601	4822 209 33432	UC3842BN
7602	4822 209 70672	LM358N SEL.
7603	4822 130 42231	BC557C
7604	4822 130 44196	BC548C
7605	5322 130 42756	BC857C
7632	5322 130 63002	IRF640
7633	4822 130 63081	BSN254A
7634	4822 130 11232	STU8NA80
	5322 390 20011	VET SILIC.P4 20GR
7647	4822 130 44196	BC548C
7651	4822 130 70025	BUX87P
7652	4822 130 44196	BC548C
7653	4822 130 44196	BC548C
7671	5322 130 63002	IRF640
	5322 390 20011	VET SILIC.P4 20GR
7672	5322 130 63002	IRF640
	5322 390 20011	VET SILIC.P4 20GR
7673	5322 130 63002	IRF640
	5322 390 20011	VET SILIC.P4 20GR
7674	5322 130 63002	IRF640
	5322 390 20011	VET SILIC.P4 20GR
7675	5322 130 63002	IRF640
7676	5322 130 63002	IRF640
	5322 390 20011	VET SILIC.P4 20GR
7681	4822 130 10829	MUN2211J
7682	4822 130 10829	MUN2211J
7683	4822 130 10829	MUN2211J
7684	4822 130 10829	MUN2211J
7685	4822 130 10829	MUN2211J
7686	4822 130 10829	MUN2211J
7911	4822 130 44104	BC328
7913	4822 130 10829	MUN2211J
	4822 502 21358	SCREW W/SPRING WASHER M4X10

1170 Terminal Panel

Various

1170	3138 128 63720	TERMINAL PCB ASSY
1001	4822 277 21595	SWI SLI B
1008	4822 267 10752	9P. MALE
1009	4822 265 10782	887 BM M 6P M2.50 RED B
1010	4822 265 10458	15P F 0.85
1002	4822 265 11176	75 OHM (ZL-6500)
1004	4822 265 11176	75 OHM (ZL-6500)
1006	4822 265 11176	75 OHM (ZL-6500)
1012	4822 265 11176	75 OHM (ZL-6500)
1014	4822 265 11176	75 OHM (ZL-6500)

2001	4822 124 80106	47µF 20% 16V
2002	4822 126 13196	100nF 10% **SMD** 25V
2003	4822 124 80106	47µF 20% 16V
2004	4822 124 80106	47µF 20% 16V
2005	4822 124 80106	47µF 20% 16V
2006	4822 124 80106	47µF 20% 16V
2007	4822 124 80106	47µF 20% 16V
2008	4822 124 80106	47µF 20% 16V
2009	4822 124 80106	47µF 20% 16V
2010	4822 124 80106	47µF 20% 16V
2011	4822 124 11932	100µF 20% 16V
2012	4822 124 80106	47µF 20% 16V
2013	4822 126 13196	100nF 10% **SMD** 25V
2014	4822 122 33177	10nF 20% 50V
2015	4822 122 33177	10nF 20% 50V
2016	4822 122 33177	10nF 20% 50V
2017	4822 122 33177	10nF 20% 50V
2018	4822 122 33177	10nF 20% 50V
2019	4822 122 33177	10nF 20% 50V
2020	4822 122 33177	10nF 20% 50V
2021	4822 122 33177	10nF 20% 50V
2022	4822 122 33177	10nF 20% 50V
2023	4822 122 33177	10nF 20% 50V
2024	4822 122 33177	10nF 20% 50V
2025	4822 122 33177	10nF 20% 50V
2026	4822 124 11931	1µF 20% 50V
2028	4822 122 33177	10nF 20% 50V
2029	4822 124 11932	100µF 20% 16V
2030	4822 126 13196	100nF 10% **SMD** 25V

3001	4822 051 20759	75Ω 5% 0.1W
3002	4822 051 20334	330k 5% 0.1W
3003	4822 051 20759	75Ω 5% 0.1W
3004	4822 051 20759	75Ω 5% 0.1W
3005	4822 051 20759	75Ω 5% 0.1W
3006	4822 051 20759	75Ω 5% 0.1W
3007	4822 051 20759	75Ω 5% 0.1W
3008	4822 117 11449	2k2 1% 0.1W
3009	4822 117 11449	2k2 1% 0.1W
3010	4822 117 11449	2k2 1% 0.1W
3011	4822 117 11449	2k2 1% 0.1W
3012	4822 051 20479	47Ω 5% 0.1W
3013	4822 051 20479	47Ω 5% 0.1W
3014	4822 051 20479	47Ω 5% 0.1W
3015	4822 051 20479	47Ω 5% 0.1W
3016	4822 051 20479	47Ω 5% 0.1W
3017	4822 051 20479	47Ω 5% 0.1W
3018	4822 051 20101	100Ω 5% 0.1W
3019	4822 051 20471	470Ω 5% 0.1W
3020	4822 050 21001	100Ω 1% 0.6W
3021	4822 051 20301	300Ω 5% 0.1W
3022	4822 051 20229	22Ω 5% 0.1W
3023	4822 051 20101	100Ω 5% 0.1W
3024	4822 051 20101	100Ω 5% 0.1W
3025	4822 051 20569	56Ω 5% 0.1W
3026	4822 051 20101	100Ω 5% 0.1W
3027	4822 051 20101	100Ω 5% 0.1W
3028	4822 051 20101	100Ω 5% 0.1W
3029	4822 051 20101	100Ω 5% 0.1W
3030	4822 051 20102	1k 5% 0.1W
3031	4822 051 20569	56Ω 5% 0.1W
3032	4822 051 20339	33Ω 5% 0.1W
3033	4822 051 20339	33Ω 5% 0.1W
3034	4822 051 20339	33Ω 5% 0.1W

5001	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B

7001	4822 209 16418	M52348SP
7002	4822 130 60383	BF824

1162 Video Panel

Various

1162	3138 128 63690	VIDEO PCB ASSY
	5322 390 20011	VET SILIC.P4 20GR
	4822 701 20292	TAPPING SCREW WITH WASHER
	4822 701 20292	TAPPING SCREW WITH WASHER
	5322 390 20011	VET SILIC.P4 20GR

1702	4822 265 41419	6P
1705	4822 267 10702	14P MALE (63461B)
1706	4822 255 10379	HFSO720-011100

2701	5322 122 34123	1n 10% 50V
2702	5322 122 34123	1n 10% 50V
2703	5322 122 34123	1n 10% 50V
2704	4822 124 12183	3,3µF 20% 50V
2705	4822 124 12183	3,3µF 20% 50V
2706	4822 124 12183	3,3µF 20% 50V

2707	4822 124 41634	22µF ELEC 16V
2708	4822 126 13196	100n F 10% **SMD** 25V
2709	4822 126 13196	100n F 10% **SMD** 25V
2710	4822 126 13196	100n F 10% **SMD** 25V
2712	4822 126 13196	100n F 10% **SMD** 25V
2714	4822 124 42171	22µF 25V
2718	5322 122 33861	12p F 10% 50V
2719	5322 122 32531	10p F 5% 50V
2720	4822 124 81071	22µF 20% 160V
2721	4822 121 70162	10µF 5% 400V
2722	4822 126 14122	6.8µF 10% 50V
2723	4822 124 80606	1µF 20% 160V

2724	4822 121 70162	10nF 5% 400V	
2725	4822 121 70162	10nF 5% 400V	
2726	4822 121 70162	10nF 5% 400V	
2728	5322 122 33861	120pF 10% 50V	
2729	5322 122 32531	100pF 5% 50V	
2730	4822 121 70162	10nF 5% 400V	
2731	4822 126 14122	6.8nF 10% 50V	
2732	4822 124 80606	1µF 20% 160V	
2733	4822 126 13196	100nF 10% **SMD** 25V	
2735	4822 126 13196	100nF 10% **SMD** 25V	
2739	5322 122 32531	100pF 5% 50V	
2740	5322 122 32531	100pF 5% 50V	
2741	4822 124 42171	22µF 25V	
2742	4822 121 70162	10nF 5% 400V	
2743	4822 126 14122	6.8nF 10% 50V	
2744	4822 124 80606	1µF 20% 160V	
2745	4822 124 41751	47µF 20% 50V	
2746	4822 124 40433	47µF 20% 25V	
2747	4822 121 43693	10nF 100V	
2748	4822 124 41634	22µF ELEC 16V	
2749	4822 126 13196	100nF 10% **SMD** 25V	
2750	4822 124 12184	10UF 20% 16V	

2751	4822 124 80131	100µF 20% 25V	
2752	5322 122 32654	22nF 10% 63V	
2753	5322 122 32654	22nF 10% 63V	
2754	4822 126 13692	47pF 1% 63V	
2755	4822 124 80131	100µF 20% 25V	
2756	4822 124 40433	47µF 20% 25V	
2757	5322 124 40641	10µF 20% 100V	
2760	5322 122 32658	22pF 5% 50V	
2761	5322 122 32658	22pF 5% 50V	
2762	5322 122 32658	22pF 5% 50V	
2763	5322 122 32658	22pF 5% 50V	
2764	4822 122 33177	10nF 20% 50V	
2765	4822 126 13692	47pF 1% 63V	
2766	5322 122 32658	22pF 5% 50V	
2767	4822 122 33646	470pF 10% 500V	
2768	4822 126 13196	100nF 10% **SMD** 25V	
2769	4822 126 13196	100nF 10% **SMD** 25V	
2770	4822 126 13196	100nF 10% **SMD** 25V	
2771	4822 121 43693	10nF 100V	
2772	4822 122 33968	1nF 5% 500V	
2773	4822 126 12267	470pF 10%R(HR) 2KV	
2774	4822 126 14102	1OnF 20% 2KV	
2776	4822 126 13196	100nF 10% **SMD** 25V	
2777	4822 252 60127	DSP-201M-C04F	
2778	4822 126 13196	100nF 10% **SMD** 25V	
2779	4822 252 60127	DSP-201M-C04F	
2780	4822 252 60127	DSP-201M-C04F	
2781	4822 126 13196	100nF 10% **SMD** 25V	
2782	4822 124 42169	470µF 25V	
2783	4822 124 41634	22µF ELEC 16V	
2784	4822 122 33177	10nF 20% 50V	
2785	4822 126 13196	100nF 10% **SMD** 25V	
2786	4822 126 13196	100nF 10% **SMD** 25V	
2787	4822 126 13196	100nF 10% **SMD** 25V	
2788	4822 126 13196	100nF 10% **SMD** 25V	
2789	4822 126 13196	100nF 10% **SMD** 25V	
2790	4822 122 33177	10nF 20% 50V	
2793	4822 126 13196	100nF 10% **SMD** 25V	
2794	4822 126 13196	100nF 10% **SMD** 25V	
2795	4822 126 13196	100nF 10% **SMD** 25V	
2796	4822 126 13196	100nF 10% **SMD** 25V	
2797	4822 126 13196	100nF 10% **SMD** 25V	
2798	4822 124 42169	470µF 25V	

3704	4822 117 11507	6k8 1% 0.1W	
3706	4822 051 20104	100k 5% 0.1W	
3707	4822 050 16802	6k8 1% 0.4W	
3708	4822 051 20102	1k 5% 0.1W	
3710	4822 117 11507	6k8 1% 0.1W	
3711	4822 051 20105	1M 5% 0.1W	
3712	4822 051 20101	100Ω 5% 0.1W	
3713	4822 051 20008	0Ω JUMP. (**SMD**)	
3714	4822 051 20008	0Ω JUMP. (**SMD**)	
3715	4822 051 20008	0Ω JUMP. (**SMD**)	
3716	4822 051 20101	100Ω 5% 0.1W	
3717	4822 051 20101	100Ω 5% 0.1W	
3718	4822 051 20101	100Ω 5% 0.1W	
3719	4822 051 20105	1M 5% 0.1W	
3721	4822 051 20479	47Ω 5% 0.1W	
3722	4822 051 20479	47Ω 5% 0.1W	
3723	4822 051 20479	47Ω 5% 0.1W	
3724	4822 117 11503	220Ω 1% 0.1W	
3725	4822 051 20101	100Ω 5% 0.1W	
3726	4822 051 20101	100Ω 5% 0.1W	
3727	4822 051 20101	100Ω 5% 0.1W	
3728	4822 051 20101	100Ω 5% 0.1W	
3729	4822 117 11139	1k5 1% 0.1W	
3730	4822 117 10833	10k 1% 0.1W	
3735	4822 117 11449	2k2 1% 0.1W	
3736	4822 051 20331	330Ω 5% 0.1W	
3737	4822 051 20223	22k 5% 0.1W	
3739	4822 051 20101	100Ω 5% 0.1W	
3740	4822 050 24709	47Ω 1% 0.6W	
3741	4822 051 20201	200Ω 5% 0.1W	
3742	4822 051 20223	22k 5% 0.1W	
3743	4822 117 11507	6k8 1% 0.1W	
3744	4822 051 20274	270k 5% 0.1W	
3745	4822 051 20109	10Ω 5% 0.1W	
3746	4822 051 20223	22k 5% 0.1W	
3747	4822 051 20223	22k 5% 0.1W	
3748	4822 050 21005	1M 1% 0.6W	
3749	4822 117 11503	220Ω 1% 0.1W	
3750	4822 117 11503	220Ω 1% 0.1W	
3751	4822 051 20113	11k 5% 0.1W	
3752	4822 111 50618	82Ω 10% 0.5W	
3753	4822 051 20113	11k 5% 0.1W	
3754	4822 051 20331	330Ω 5% 0.1W	
3755	4822 051 20113	11k 5% 0.1W	
3757	4822 051 20101	100Ω 5% 0.1W	
3758	4822 051 20201	200Ω 5% 0.1W	
3760	4822 051 20479	47Ω 5% 0.1W	
3761	4822 117 11507	6k8 1% 0.1W	
3762	4822 051 20274	270k 5% 0.1W	
3763	4822 051 20109	10Ω 5% 0.1W	
3765	4822 051 20223	22k 5% 0.1W	
3766	4822 050 21005	1M 1% 0.6W	
3767	4822 051 20223	22k 5% 0.1W	
3768	4822 051 20223	22k 5% 0.1W	
3769	4822 111 50618	82Ω 10% 0.5W	
3770	4822 051 20339	33Ω 5% 0.1W	
3771	4822 051 20339	33Ω 5% 0.1W	
3772	4822 051 20331	330Ω 5% 0.1W	
3773	4822 051 20339	33Ω 5% 0.1W	
3775	4822 051 20101	100Ω 5% 0.1W	
3776	4822 051 20201	200Ω 5% 0.1W	
3778	4822 117 11507	6k8 1% 0.1W	
3779	4822 051 20274	270k 5% 0.1W	
3780	5322 116 51882	0Ω jumper FR25)	
3781	4822 051 20109	10Ω 5% 0.1W	
3784	4822 050 21005	1M 1% 0.6W	
3785	4822 051 20105	1M 5% 0.1W	
3786	4822 051 20102	1k 5% 0.1W	
3787	4822 111 50618	82Ω 10% 0.5W	
3788	4822 117 11503	220Ω 1% 0.1W	
3789	4822 051 20102	1k 5% 0.1W	
3790	4822 051 20479	47Ω 5% 0.1W	
3791	4822 117 10833	10k 1% 0.1W	
3792	4822 051 20472	4k7 5% 0.1W	
3793	4822 051 20105	1M 5% 0.1W	
3794	4822 051 20561	560Ω 5% 0.1W	
3795	4822 051 20132	1k3 5% 0.1W	
3796	4822 051 20562	5k6 5% 0.1W **SMD**	
3797	4822 051 20332	3k3 5% 0.1W	
3798	4822 051 20102	1k 5% 0.1W	
3799	4822 051 20101	100Ω 5% 0.1W	
3801	4822 051 20101	100Ω 5% 0.1W	
3802	4822 051 20101	100Ω 5% 0.1W	
3803	4822 117 12993	0Ω01 100% 0.4W	
3804	4822 051 20102	1k 5% 0.1W	
3805	4822 051 20102	1k 5% 0.1W	
3811	4822 050 21502	1k5 1% 0.6W	
3812	4822 116 80548	15k 5% 0.5W	
3814	4822 051 20008	0Ω JUMP. (**SMD**)	
3815	4822 051 20008	0Ω JUMP. (**SMD**)	
3816	4822 051 20008	0Ω JUMP. (**SMD**)	
3819	4822 051 20331	330Ω 5% 0.1W	
3821	4822 051 20331	330Ω 5% 0.1W	
3823	4822 051 20331	330Ω 5% 0.1W	

5702	4822 157 53519	IND FXD SP0406 A 100U PM10 B
5703	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B
5704	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B
5705	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B
5706	3138 128 78040	COIL 0.15µH 10%
5707	3138 128 78040	COIL 0.15µH 10%
5708	3138 128 78040	COIL 0.15µH 10%
5709	4822 157 53189	CHOKE COIL 5.0µH PM10
5711	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B
5712	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B
5713	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B

6702	4822 130 34382	BZX79-B8V2
6708	4822 130 42489	BYD33G
6709	4822 130 31878	1N4003G
6710	4822 130 80877	BAV103
6711	4822 130 80877	BAV103
6712	4822 130 80877	BAV103

7701	4822 209 16419	M52742SP
7702	4822 209 16103	LXC4389P1
7703	5322 209 11473	74HCT86N
7707	4822 209 16422	CVA4403
7708	4822 209 15329	CR6927
	5322 390 20011	VET SILIC.P4 20GR
7709	4822 130 11231	CVA4502N
7725	5322 130 42136	BC848C
7727	5322 209 85913	MC7912CT
	4822 526 10544	FERRITE BEAD TR-3.5X1.3X6

1163 Encoder Panel

Various

1163	3138 128 63700	ENCODER PCB ASSY
1247	4822 273 10348	ENCODER
1248	4822 276 13949	TACT SWITCH
6291	4822 130 83789	L-59GYC
	3138 178 72510	CON. 8 PIN WIRE HARNESS

1164 Switch Panel

Various

1164	4822 212 11701	DC SWITCH PCB ASSY
1199	4822 276 13886	SWITCH 2P PUSH BUTTON

The Introduction of CM5800, 21" Monitor

0. Functional Block Diagram
1. General Description
2. Description of Circuit Diagram
A.Power Supply / Power Saving Management
B.Horizontal / Vertical Deflection
C.Video board & DDC 1/2B
D.Digital Circuit & Micro-controller

1.GENERAL DESCRIPTION

The CM5800, 21" is a Digital Controlled Auto-scan Color Display Monitor with high resolution. This monitor can operate at horizontal scan frequencies from 30 to 115 kHz and vertical scan frequencies from 50 to 160 Hz.

This monitor is equipped with an embedded micro-controller which can preset the required modes. The CM5800 provides many functions, such as digital adjustable picture, DDC1/2B, power management, low emission, high immunity ,etc.

This monitor complies with TCO low emission standard and also fulfills TCO'91 automatic power saving requirements. To reduce power consumption less than 15 watts in standby or suspend mode and less than 5 watts in off mod, the monitor also complies with energy star computer program initiated by the EPA.

2.DESCRIPTION OF CIRCUIT DIAGRAM

This description mainly introduces the functions, including power supply / power saving management, horizontal / vertical deflection, video amplifier, micro-controller, etc.

A.POWER SUPPLY / POWER SAVING MANAGEMENT

POWER SUPPLY:

This monitor is designed as switch mode power supply which can operate mains input from 90 VAC to 264 VAC . The power supply uses an IC(L4990) for current mode PWM controller and drives the MOSFET switch directly. The control scheme transforms a switching converter from a voltage source into a multi-output voltage. The control concept is exhibited many desirable properties such as inherent over-load protection, stable and fast system response.

The maximum power consumption is up to 160 watts. A power limiting circuit is added for safety reason.

On main power supply circuit, secondary feedback via an photo-coupler is used to obtain a stable output voltage. The secondary feedback supplies all necessary voltages for deflection and video. On second power supply, voltage stabilizer IC is used to supply the small signals and micro-controller/EPROM.

CM5800 21A BRIEF

POWER SAVING MANAGEMENT:
This monitor can save power consumption while no sync pulses are detected by micro-controller and automatically recover to normal power when sync signals are detected by micro-controller.
During power saving mode , the second power supply still delivers 5V to μc.
The consume power is less than 15 watts during standby / suspend modes, and less than 5 watts during off mode.

B.HORIZONTAL / VERTICAL DEFLECTION
HORIZONTAL DEFLECTION:
The heart of horizontal/vertical deflection controller is TDA4854 which can offer a complete and efficient small signal sync processing for auto-sync monitors. All functions are controlled by I2C bus.
This controller provides sync processing, which can accept separate , composite (H+V) and sync-on-video input signals. A very short setting time after mode change for protection of external power components has been taken.
The TDA4854 provides extensive functions like a flexible SMPS block and a geometry control with facilities ,leading to excellent picture quality. This device also can directly drive the vertical deflection output stage ,the line driver stage , the E/W output stage and the EHT stage. All controls are dc and tracked with the incoming frequencies.
The horizontal deflection is built around the buck converter which makes it possible to combine H-deflection and EHT generator and allows size and E/W correction without influencing EHT. Raster can be adjusted along horizontal direction by VR3551.
Transformer (LOT) generates the required 26.8kV anode voltage.
The adjustable focus (G3) and screen (G2) voltages are internally derived from the anode voltage. Other secondary windings are used to generate the voltages for G1.
For 21 inch monitor also provides dynamic focus on G4 to get a good focus performance.(G4 also adjustable).
To guarantee constant EHT over the whole frequency range , the B+ is made tracked with H-frequency by means of a step down converter.
The horizontal size and east/west correction are obtained by varying the voltage of buck converter of the lower deflection a circuit.
Six-capacitors switch and dc controlled linearity coil are designed for optimal screen linearity.
For safety reasons, x-ray protection circuit is included, UC3842 will shut down EHT generator if the anode voltage exceeds a certain value(28.5kV).
This circuit is also used for beam current overload protection . Shut down EHT in case the total beam current exceeds a certain limit to protect both CRT and LOT.

VERTICAL DEFLECTION:
The majority of vertical deflection functions is integrated by two ICs ; TDA4854 and TDA8177.
The TDA4854 takes care of sync polarity correction ,automatic catching and holding of the vertical oscillator ,generation of saw-tooth drive current for vertical output and vertical s-correction ,and generation of a correct V-blanking pulse for video blanking during vertical retrace lines.
The TDA8177 which is a dc-coupled vertical deflection booster with differential input signals is suitable for color monitor. The output stage has thermal and soar protection ,and high linear saw-tooth signal amplification to obtain the required vertical deflection current.
To obtain a fast vertical retrace for non-VGA mode an external flyback supply is used.

C.VIDEO AMPLIFIER & DDC 1/2B

VIDEO AMPLIFIER:
The heart of video circuit is M52742SP. This controller can drive the hybrid post-amp. CR6927 by buffer stage. The video DC level and gain at the cathode will be controlled by the software.
The red , green and blue video signals are amplified and inverted by the post-amplifier to output stage and AC coupled to the CRT cathodes.
Three cut-off adjustments are provided to set the video black level at cathode for all three guns. Also three individual gain adjustments are provided to adjust the white point at maximum swing. Both cut-off and gain controls are digit type control by micro-processor.
For limiting the beam current and preventing the local doming ,the beam current limit will automatically reduce the video swing in case the maximum beam current is exceeded.(ABL adjustment:R3647)
A spot-killer circuit is also added to prevent the CRT spot burn-in when the set is switched off.

DDC 1/2B:
Via SDA, the data about the information of the monitor , including the serial number , production codes ,CRT type and applicable timings are stored in the EEPROM (24lC21). To avoid picture interference ,the reading and writing processes are executed during vertical blanking which is informed by the vertical SYNC.

D.MICROCONTROLLER

GENERAL DESCRIPTION:
The Philips P87C380 u-processor is used to control the monitor. The preset data are stored in EEPROM ST24W08.

CM5800 21A BRIEF

HARDWARE DEFINITION:

a)KEY BOARD

There are one key pad and one rotary encoder at the front of monitor for the OSD control.

- OSD function key:

  Push it, to confirm the entrance or exit from the OSD window

- Encoder:

  To select or adjust the parameters which are chosen from OSD.

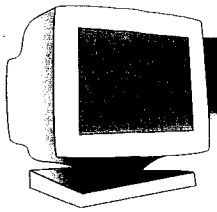
b)OSD will DISAPPEAR and save automatically after non-operation

c) Software will control the DPMS according to the SYNC status.

d)VIDEO PRESET MODES

Pre-set Video Resolution and Sync Polarities

Resolution modes	H frequency	V frequency	H	V
640 x 400	31.5K	70Hz (VGA)	-	+
640 x 480	31.5K	60Hz (VGA)	-	-
640 x 480	37.5K	75Hz (VESA/75)	-	-
800 x 600	46.9K	75Hz (VESA/75)	+	+
800 x 600	53.7K	85Hz (VESA/85)	+	+
1024 x 768	60.0K	75Hz (VESA/75)	+	+
1024 x 768	68.7K	85Hz (VESA/85)	+	+
1152 x 870	69.0K	75Hz (MAC)	-	-
1152 x 900	71.8K	76Hz (SUN SPARC)	+	+
1280 x 1024	80.0K	75Hz (VESA/75)	+	+
1280 x 1024	91.0K	85Hz (VESA/85)	+	+
1600 x 1200	106.3K	85Hz (VESA/85)	+	+
1800 x 1350	105.45K	75Hz	+	+
1600 x 1200	112.5K	90Hz	+	+
1800 x 1440	112.5K	75Hz	+	+



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BECAUSE OF A POLICY OF CONTINUOUS PRODUCT IMPROVEMENT,
THE INFORMATION MENTIONED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

Setting Up *your Philips monitor*

Installation de votre moniteur Philips.

Configuración de su monitor Philips.

This foldout is designed to help you use your monitor as soon as possible. Refer to your owner's manual for detailed information. You may also contact us at our web site: http://www.monitors.be.philips.com

Ce dépliant est conçu pour vous aider à utiliser votre moniteur du plus vite possible. Consulter votre manuel d'utilisateur pour des informations détaillées. Vous pouvez aussi nous contacter sur notre site Web: http://www.monitors.be.philips.com

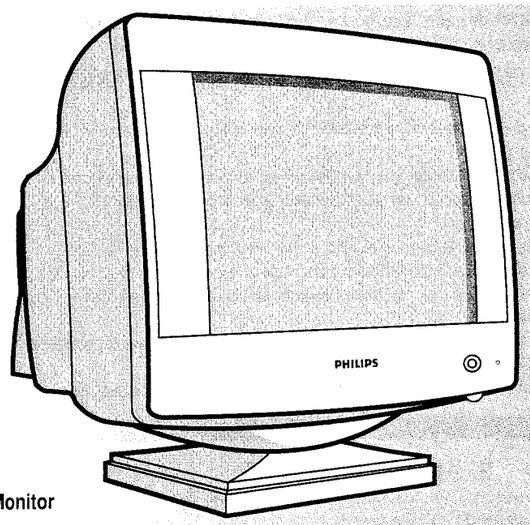
Esta hoja plegable está diseñada para ayudarle a usar su monitor tan pronto como sea posible. Consulte su manual si desea información detallada. También puede comunicarse con nosotros a través de nuestra página web: http://www.monitors.be.philips.com

Because of a policy continuous product improvement, the information mentioned by this documents are subject to change without notice.
Du fait de notre politique d'amélioration constante de nos produits, les spécifications ci-dessus sont sujettes à modification sans avis préalable.
En el marco de la política de mejora continuada de nuestros productos, las especificaciones arriba indicadas están sujetas a cambio sin previo aviso.

To hook up your monitor to a Macintosh-type computer, follow the steps below. To hook up your monitor to an IBM-compatible computer, follow step 1, then turn over this foldout. In either case, before installing this monitor, please refer to the user's guide of your computer and video adapter to see if this equipment needs any additional setting.

Suivre les étapes suivantes pour connecter votre moniteur à un ordinateur du type Macintosh. Pour connecter votre moniteur à un ordinateur compatible IBM, suivre la première étape, puis tourner ce dépliant. En tout cas, avant l'installation de votre moniteur, veuillez vous référer au manuel d'utilisateur de votre ordinateur et carte vidéo pour voir si cet équipement a besoin d'installation supplémentaire.

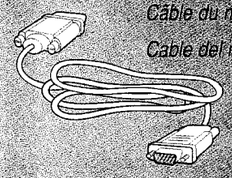
Para conectar su monitor a un ordenador tipo Macintosh, siga los pasos que se presentan a continuación. Para conectar su monitor a un ordenador compatible con IBM, siga el paso 1, luego voltee esta página. En ambos casos, antes de instalar este monitor, consulte la guia del usuario de su ordenador y de su adaptador de vídeo, para comprobar si este equipo necesita alguna configuración adicional.

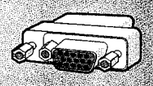


Monitor
Moniteur
Monitor

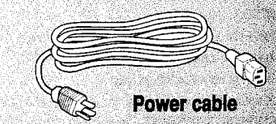
1 Unpack all the parts.
Déballer toutes les pièces.
Desembale todas las piezas.

Monitor cable
Câble du moniteur
Cable del monitor



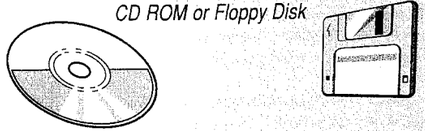


Macintosh adapter (optional)
Carte Macintosh (optionnelle)
Adaptador de Macintosh (opcional)

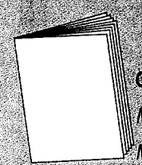


Power cable
(Appearance may vary from actual item enclosed.)
Câble de puissance (l'apparence varie)
Cable de energía (su aspecto puede variar)

CD ROM or Floppy Disk
CD-ROM ou Floppy Disk
CD ROM or Floppy Disk

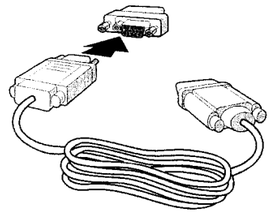


(Windows 95 driver depends actual item enclosed)



Owner's manual
Manuel d'utilisateur
Manual del propietario

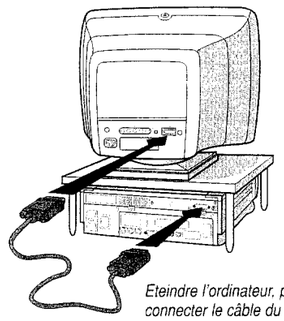
2 Connect the special Mac adapter (May not be included.) to one end of the monitor cable.



Connecter la carte spéciale Mac (pas toujours inclue) à une extrémité du câble du moniteur.

Conecte el adaptador especial de Mac (puede no estar incluido) a un extremo del cable del monitor.

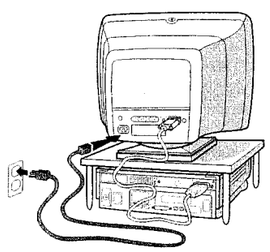
3 Turn off the computer. Then connect the monitor cable.



Eteindre l'ordinateur, puis connecter le câble du moniteur

Apague el ordenador. Luego conecte el cable del monitor.

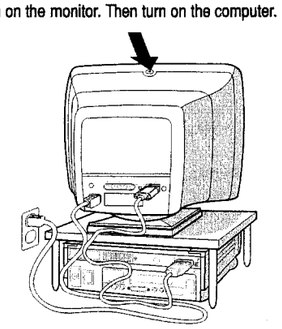
4 Connect the power cable. Make sure the power plug and the wall socket are easily accessible.



Connecter le câble de puissance. S'assurer que la fiche secteur et la prise murale soient facilement accessibles.

Conecte el cable de energía. Verifique que se pueda acceder fácilmente al tomacorriente y al enchufe de pared.

5 Turn on the monitor. Then turn on the computer.



Allumer le moniteur, puis l'ordinateur.

Encienda el monitor. Luego encienda el ordenador.

Setting Up *your Philips monitor*

Installation de votre moniteur Philips.

Configuración de su monitor Philips.

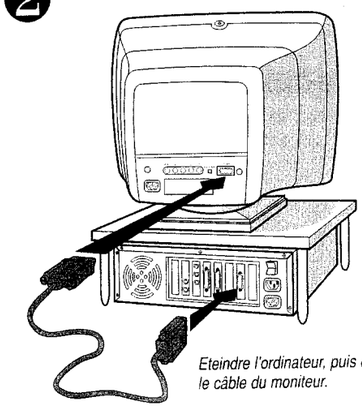
IBM-compatible computer hookup continued from step 1 on other side.

Connecter l'ordinateur compatible IBM, suite de la première étape de l'autre côté.

Conexión del ordenador compatible con IBM (continuación del paso 1 del otro lado de la página).

Monitor Model for Windows'95 Driver:
Philips Brilliance 201P (Product ID: 21A58...)
Philips Brilliance 201B (Product ID: 21B58...)

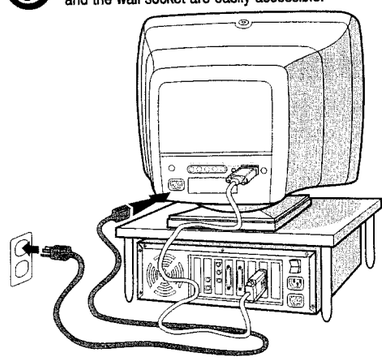
2 Turn off the computer. Then connect the monitor cable.



Eteindre l'ordinateur, puis connecter le câble du moniteur.

Apague el ordenador. Luego conecte el cable del monitor.

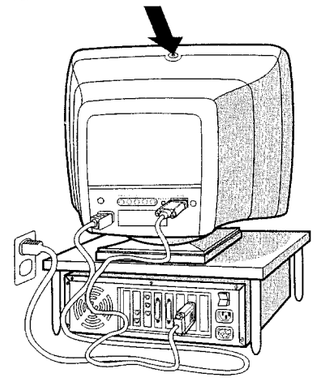
3 Connect the power cable. Make sure the power plug and the wall socket are easily accessible.



Connecter le câble de puissance. S'assurer que la fiche secteur et la prise murale soient facilement accessibles.

Conecte el cable de energía. Verifique que se pueda acceder fácilmente al tomacorriente y al enchufe de pared.

4 Turn on the monitor. Then turn on the computer.



Allumer le moniteur, puis l'ordinateur.

Encienda el monitor. Luego encienda el ordenador.

WHAT TO DO IF YOUR MONITOR ISN'T WORKING

Make sure . . .
. . . the Power cable is plugged in the wall and the rear of the monitor.
. . . the Power button on top of the monitor should be in the ON position.
. . . the monitor cable is properly connected to the back of the monitor and the computer.
. . . to check to see if the monitor cable has bent pins.
. . . the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 17 of the owner's manual for details.

See page 20 of the owner's manual for troubleshooting tips.
For warranty questions, please see your owner's manual.

QUE FAIRE SI VOTRE MONITEUR NE MARCHE PAS

S'assurer . . .
. . . que le câble de puissance soit branché dans le mur et à l'arrière du moniteur.
. . . que le bouton Marche/Arrêt au dessus de votre moniteur soit sur MARCHE.
. . . que le câble du moniteur soit bien connecté à l'arrière du moniteur et de l'ordinateur.
. . . de vérifier que le câble du moniteur n'ait pas de fiches tordues.
. . . que l'interrupteur D-Sub/BNC à l'arrière du moniteur soit en position correcte. Voir page 24 et 39 de votre manuel d'utilisateur pour plus de détails.

Voir page 42 du manuel d'utilisateur pour des conseils de dépannage.
Si vous avez des questions concernant la garantie, veuillez consulter votre manuel d'utilisateur.

¿QUÉ HACER SI SU MONITOR NO FUNCIONA?

Verifique . . .
. . . si el cable de energía está enchufado a la fuente de energía y a la parte posterior del monitor.
. . . si el botón de alimentación en la parte superior del monitor está en la posición ON.
. . . si el cable del monitor está debidamente conectado a la parte posterior del monitor y del ordenador.
. . . que las clavijas del cable del monitor no estén dobladas.
. . . que el interruptor D-Sub/BNC en la parte posterior del monitor esté en la posición correcta. Si desea más detalles, consulte las páginas 46 y 61 del manual del propietario.

En la página 64 del manual del propietario encontrará consejos sobre la localización de fallas.
Para consultas sobre la garantía, consulte el manual del propietario.

If you have Windows '95 . . .

follow these steps to complete setting up your monitor.

1. Start Windows '95 and install CD ROM supplied with this monitor.
2. Click on the "START" icon. Next, click on the "SETTINGS" icon. Then click on "CONTROL PANEL."
3. Double-click on "DISPLAY" icon. Next, click on "SETTINGS" tab. Then click on "ADVANCED PROPERTIES" dialog box.
4. Click on "MONITOR" tab.

5a. If you have an old computer, click on "CHANGE" dialog box. Next, "SELECT DEVICE" screen appears. Now click on "HAVE DISK" dialog box. and select CD-ROM drive

Or

5b. If you have a new computer, "SELECT DEVICE" screen automatically appears. Click on "HAVE DISK" dialog box and select CD-ROM drive.

6. Select "OK" in the "INSTALL FROM DISK" dialog box. If model name of the Philips monitor is correct, click "OK" tab in the "SELECT DEVICE" dialog box.
7. Click "CLOSE" tab in the "ADVANCED PROPERTIES" dialog box. If your Windows '95 version is different or you need more detailed installation information, please refer to the Windows '95 user's manual. **For additional information on the monitor, please refer to the owner's manual.**

Si vous avez Windows '95 . . .

suivez les étapes suivantes pour terminer l'installation de votre moniteur.

1. Démarrer Windows 95 et installer le CD-ROM fourni avec votre moniteur.
2. Cliquer sur l'icône "DEMARRER", ensuite, cliquer sur l'icône "PARAMETRES", puis cliquer sur l'icône "PANNEAU DE CONFIGURATION".
3. Cliquer deux fois sur l'icône "AFFICHER", ensuite cliquer sur l'onglet "PARAMETRES", puis cliquer sur la boîte de dialogue "PROPRIETES AVANCEES".
4. Cliquer sur l'onglet "MONITEUR".

5a. Si vous avez un ancien ordinateur, cliquer sur la boîte de dialogue "CHANGER". ensuite l'écran "SELECTIONNER UNITE" apparaît. Maintenant cliquer sur la boîte de dialogue "DISQUETTE FOURNIE", et sélectionner le lecteur CD-ROM.

ou

5b. Si vous avez un ordinateur récent, l'écran "SELECTIONNER UNITE" apparaît automatiquement. Cliquer sur la boîte de dialogue "DISQUETTE FOURNIE" et sélectionner le lecteur CD-ROM.

6. Sélectionner "OK" dans la boîte de dialogue "INSTALLER A PARTIR DE LA DISQUETTE". Si le nom du modèle de moniteur Philips est correct, cliquer sur l'onglet "OK" dans la boîte de dialogue SELECTIONNER UNITE"
7. Cliquer sur l'onglet "FERMER" dans la boîte de dialogue "PROPRIETES AVANCEES". Si votre version Windows 95 est différente ou si vous voulez des informations plus détaillées sur l'installation, veuillez vous référer au manuel d'utilisateur de Windows 95. **Pour des informations complémentaires sur le moniteur, veuillez vous référer au manuel d'utilisateur.**

Si tiene Windows '95 . . .

siga estos pasos para finalizar la configuración de su monitor.

1. Inicie Windows '95 e instale el CD ROM que se suministra con su monitor.
2. Haga clic en el icono "INICIO". Luego haga clic en el icono "CONFIGURACIÓN". Luego haga clic en "PANEL DE CONTROL".
3. Haga doble clic en el icono "PANTALLA". A continuación haga clic en la etiqueta "CONFIGURACIÓN" y luego en el cuadro de diálogo "PROPIEDADES AVANZADAS".
4. Haga clic en la etiqueta "MONITOR".

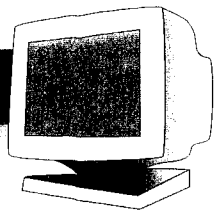
5a. Si usted tiene un ordenador viejo, haga clic en el cuadro de diálogo "CAMBIAR". Luego aparece la pantalla "SELECCIÓN DE DISPOSITIVO". Ahora haga clic en el cuadro de diálogo "UTILIZAR DISCO" y seleccione la unidad CD-ROM.

O

5b. Si tiene un ordenador nuevo, aparece automáticamente la pantalla "SELECCIONAR DISPOSITIVO". Haga clic en el cuadro de diálogo "UTILIZAR DISCO" y seleccione la unidad CD-ROM.

6. Seleccione "ACEPTAR" en el cuadro de diálogo "INSTALAR DESDE DISCO". Si el nombre del modelo del monitor Philips está correcto, haga clic en la etiqueta "ACEPTAR" del cuadro de diálogo "SELECCIÓN DE DISPOSITIVO".
7. Haga clic en la etiqueta "CERRAR" del cuadro de diálogo "PROPIEDADES AVANZADAS". Si su versión de Windows '95 es diferente o necesita información más detallada acerca de la instalación, consulte el manual del usuario de Windows '95. **Si desea información adicional acerca del monitor, consulte el manual del propietario.**

INTRODUCTION AND SAFETY



Introduction

The Philips Brilliance 201P/201B color monitor displays sharp and brilliant images of text and graphics with a maximum resolution of 1800x1440(201P),1800x1350(201B) pixels. It is optimal for Windows, CAD / CAM / CAE, desktop publishing, spread sheets, multi-media, and any other application that demands a large screen size and high resolutions.

The monitor automatically scans horizontal frequencies from 30KHz to 115KHz(201P),107KHz(201B), and vertical frequencies from 50Hz to 160Hz. With microprocessor-based digital-controlled circuitry and On-Screen Display (OSD) controls, the monitor can automatically adjust itself to the video card's scanning frequency and displays an image with the precise parameters you desire.

Features

- An anti-glare, anti-static, and anti-reflection high-contrast screen coating eliminates any bad effects caused by room light reflecting on and dust attracted to the screen's surface.
- With the Color Adjustment feature, you can easily choose different preset color temperatures or set your own customized color parameters.
- The Image Tilt Adjustment feature corrects a rotated image. This correction minimizes the distortions caused by elements such as the Earth's magnetic field.
- The full-size feature expands the image on the monitor to fill the screen when used in factory preset modes.
- USB Bay at back of monitor is prepared for the Universal Serial Bus hub. You can easily and flexibly connect USB-designed devices – such as a mouse or keyboard – to the monitor for true Plug-and-Play function. USB hub sold separately (optional).
- Green Design – including automatic power saving function (NUTEK) and low-emission compliance (TCO '95) – shows your commitment to the environment.
- DDC1/DDC2B allows communication between the monitor and the PC for optimal video configuration.
- New CrystalClear technology for sharpnest high brightness and high contrast
- Moire Cancellation eliminates diffraction, a fringe pattern in the picture.

NOTE: Your monitor operates according to the VESA DDC level 1/2B. Only computers that support the same guidelines and operate at the same or a higher level can make use of this feature. If your computer does not support the relevant guidelines, you can still use your monitor and computer. However, you may need to manually specify the appropriate resolution in the computer.

As an Energy Star Partner, Philips has determined that this product meets the Energy Star guidelines for energy efficiency.

Contact us at our web site: http://www.monitors.be.philips.com

Safety precautions and maintenance

- Unplug the monitor, if you are not going to use it for an extended period of time.
- Unplug the monitor, if you need to clean it with a slightly damp cloth. Wiping the screen with a dry cloth is okay when the power is off. However, never use alcohol or ammonia-based liquids.
- Consult a service technician if the monitor does not operate normally when following the instructions in this manual.
- The back cover should be removed only by qualified service personnel.
- Keep the monitor out of direct sunlight and away from stoves or any other heat source.
- The top of the monitor is not a shelf. Remove any object that could fall into the vents or prevent proper cooling of the monitor's electronics.
- Keep the monitor dry. To avoid electric shock, do not expose it to rain or excessive moisture.
- Keep the monitor away from magnetic objects,such as speakers, electric motors, transformers, etc.
- When positioning the monitor, make sure the power plug and outlet are easily accessible.

End-of-life disposal

Your new monitor contains materials that can be recycled and reused. Specialized companies can recycle your product to increase the amount of reusable materials and to minimize the amount to be disposed of.

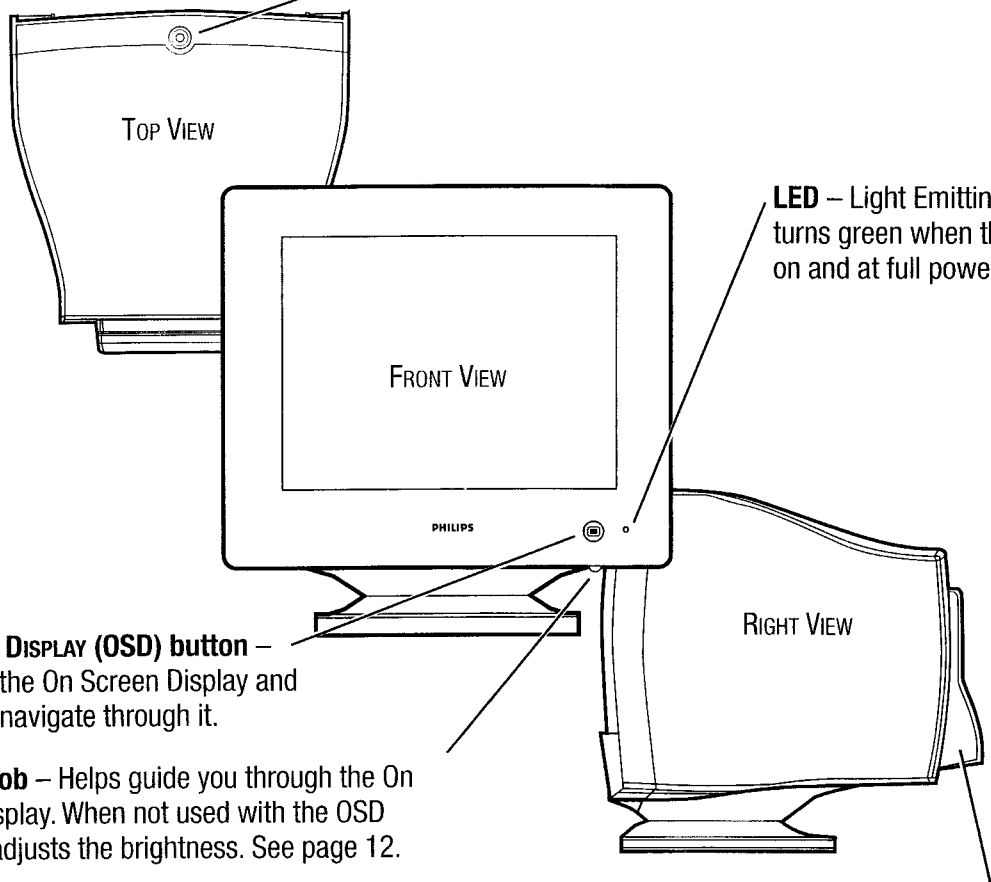
Please find out about the local regulations on how to dispose of your old monitor.

ENERGY STAR is an U.S. registered mark.

As an energy star partner, Philips has determined that this product meets the energy star guidelines for energy efficiency.
IBM, IBM PC, and Power PC are registered trademarks of International Business Machines Corporation.
Apple, Macintosh, Quadra, Performa, and Centris are registered trademarks of Apple Computer, Inc.

Description of Controls

Power Button – Turns the unit On and Off.

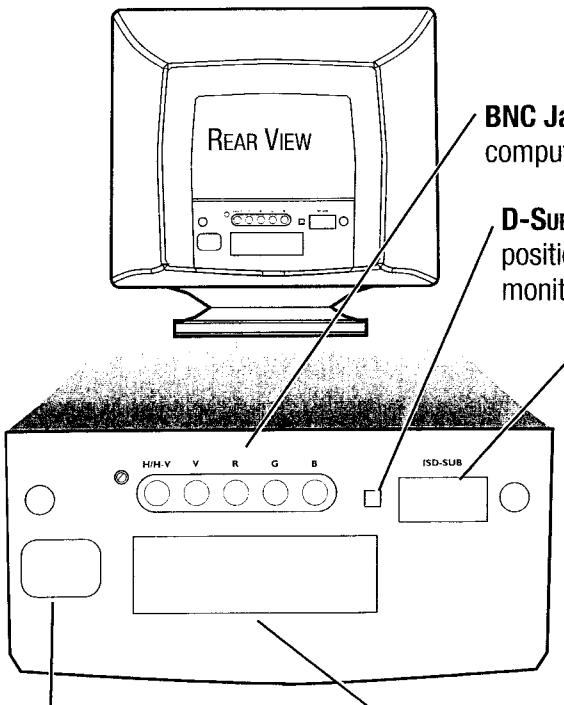


LED – Light Emitting Diode turns green when the monitor is on and at full power.

On Screen Display (OSD) button – Brings up the On Screen Display and helps you navigate through it.

Rotary Knob – Helps guide you through the On Screen Display. When not used with the OSD button, it adjusts the brightness. See page 12.

Cable Cover – Snaps onto the back of the monitor to conceal cable connections. (Cable connections shown in the manual are without the cover on.)



BNC Jacks – Another way of hooking video from the computer to the monitor. See page 16 for details.

D-Sub / BNC Switch – This switch should be in the D-Sub position when using the monitor cable included with the monitor. See page 16 and the foldout for details.

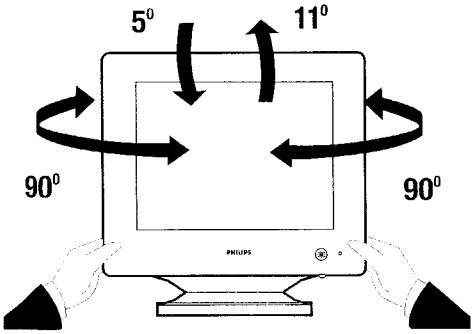
D-SUB Plug – Connect one end of the monitor cable here. See foldout for details.

Power Plug – Plug the power cord in here. See foldout for details.

USB Bay – Slot for plugging in USB Hub. Optional hardware that allows true Plug-and-Play. See page 16 for details.

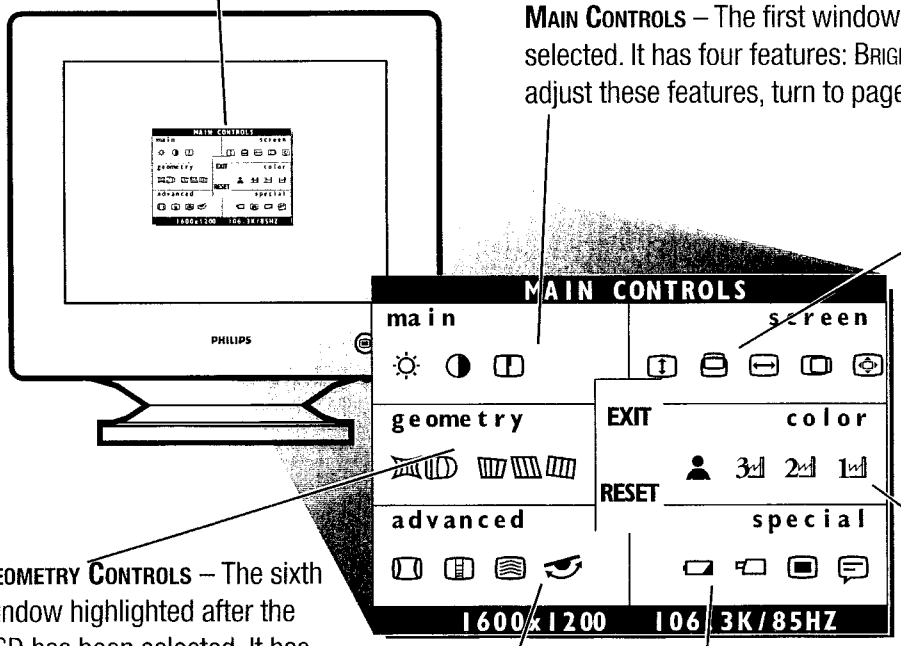
DESCRIPTION OF CONTROLS

PEDESTAL



PEDESTAL – With the built-in pedestal, you can tilt and swivel the monitor to the most comfortable viewing angle. To best use your monitor, always place it at eye level.

ON SCREEN DISPLAY – Your monitor is preset at the factory. However, you can adjust it using the ON SCREEN DISPLAY button and the ROTARY knob described on page 2. The way to do so is through the On Screen Display (OSD). Below is a brief description of the six On Screen Display windows.



MAIN CONTROLS – The first window highlighted after the OSD has been selected. It has four features: BRIGHTNESS, CONTRAST and DEGAUSS. To adjust these features, turn to pages 4 - 5.

SCREEN SIZE & POSITION – The second window highlighted after the OSD has been selected. It has five features: FULL SIZE, HORIZONTAL POSITION, HORIZONTAL SIZE, VERTICAL POSITION, and VERTICAL SIZE. To adjust these features, turn to pages 6 - 7.

COLOR TEMPERATURE – The third window highlighted after the OSD has been selected. It has four features: CAD/CAM, DTP, PHOTO RETOUCH, and USER PRESETS. To adjust these features, turn to pages 8 - 9.

GEOMETRY CONTROLS – The sixth window highlighted after the OSD has been selected. It has five features: PINCUSHION, BALANCED PINCUSHION, TRAPEZOID, PARALLELOGRAM, and ROTATION. To adjust these features, turn to page 14.

ADVANCED CONTROLS – The fifth window highlighted after the OSD has been selected. It has four features: CORNER CORRECTION, VERTICAL LINEARTY, MOIRE, and ROTARY DEFAULT. To adjust these features, turn to page 12.

SPECIAL CONTROLS – The fourth window highlighted after the OSD has been selected. It has four features: LANGUAGE, OSD CONTROLS, VIDEO INPUT AND POWER SAVING. To adjust these features, turn to pages 10 - 11.

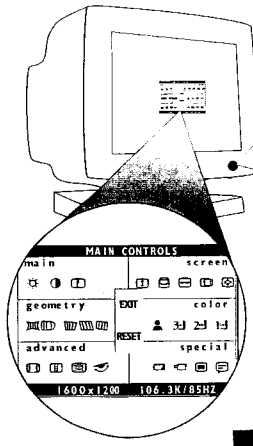
Note: LANGUAGE allows you to change the On Screen Display from English to French, Spanish, German, or Italian. See page 10 for details.

How to Use the On Screen Display (OSD)

Main Controls window

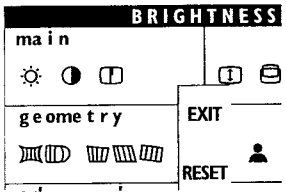
Brightness

To adjust your screen's brightness, follow the steps below. Brightness is the overall intensity of the light coming from the screen. A 50% brightness level is recommended.



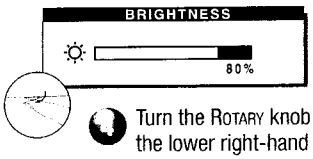
Press the On Screen Display button.

Press the On Screen Display button to highlight Brightness icon.



Press the On Screen Display button to return to Main Controls window.

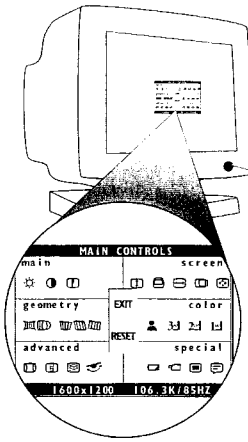
Press the On Screen Display button to bring up Brightness screen.



Turn the Rotary knob (at the lower right-hand corner of the monitor) to adjust the brightness.

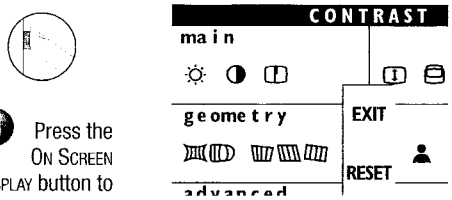
Contrast

To adjust your screen's contrast, follow the steps below. Contrast is the difference between the light and dark areas on the screen. A 100% contrast level is recommended.



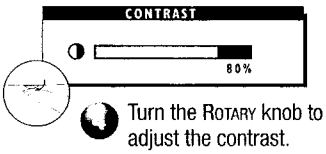
Press the On Screen Display button.

Press the On Screen Display button. Next, turn the Rotary knob until the Contrast icon is highlighted.



Press the On Screen Display button to return to Main Controls window.

Press the On Screen Display button to bring up Contrast screen.



Turn the Rotary knob to adjust the contrast.

Smart Help

After returning to Main Controls . . .

. . . *to continue to Contrast,* turn the Rotary knob until Contrast icon is highlighted. Next, follow steps 3 - 5 under Contrast.

. . . *to exit completely,* press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

Smart Help

After returning to Main Controls . . .

. . . *to continue to Degauss,* turn the Rotary knob until Degauss icon is highlighted. Next, follow steps 2-3 under Degauss (on the next page).

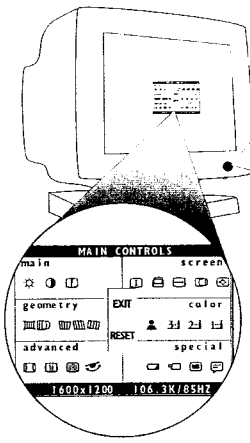
. . . *to exit completely,* press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options).

How to Use the On Screen Display (OSD)

Main Controls window

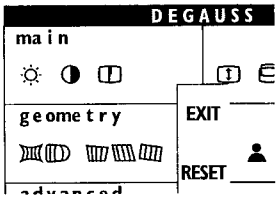
Degauss

To degauss your screen, follow the steps below. Degaussing removes electromagnetic build up that may distort the color on your screen.

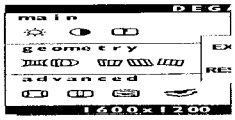


1. Press the On Screen Display button.

2. Press the On Screen Display button. Next, turn the Rotary knob until the Degauss icon is highlighted.



For a moment, the screen will be distorted. Then it will return to normal. You will be back at the Main Controls window.



3. Press the On Screen Display button to degauss your screen.

Smart Help

After returning to Main Controls . . .

. . . to continue to the Screen Size & Position window, turn the Rotary knob until Exit is highlighted. Next, press the OSD button. Turn to the next page and follow steps 2 - 5 under Full Size.

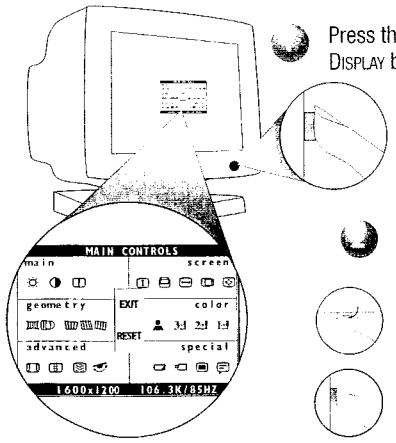
. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

Screen Size & Position window

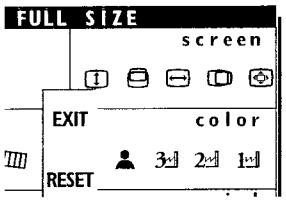
Full Size

Full Size allows you to adjust the image on your screen to its maximum height and width. If nothing happens when you use this feature, the image is already at full size. You can use Full Size to both enable and disable this feature. *Note: Full Size only works with the monitor's factory presets.*



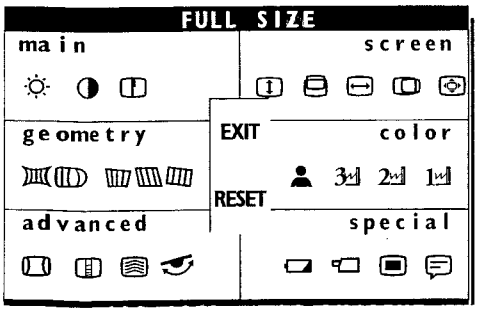
Press the On Screen Display button.

Turn the Rotary knob until the Screen Size & Position window is highlighted. Next, press the On Screen Display button. The Full Size icon is highlighted.



The image will automatically adjust to full size. You can now go on to your next adjustment.

Press the On Screen Display button.



Smart Help

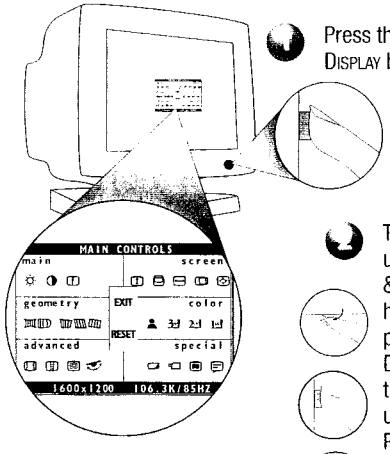
After returning to Screen Size & Position . . .

. . . *to continue to Horizontal Position,* turn the Rotary knob until Horizontal Position is highlighted. Next, follow steps 3 - 5 under Horizontal Position.

. . . *to exit completely,* press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

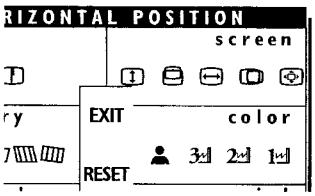
Horizontal Position

Horizontal Position shifts the image on your screen either to the left or right. Use this feature if your image does not appear centered.



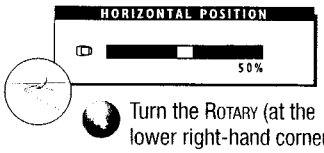
Press the On Screen Display button.

Turn the Rotary knob until the Screen Size & Position window is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until Horizontal Position is highlighted.



Press the On Screen Display button to return to Screen Size & Position.

Press the On Screen Display button to bring up Horizontal Position screen.



Turn the Rotary (at the lower right-hand corner of the monitor) knob until the image is horizontally balanced.

Smart Help

After returning to Screen Size & Position . . .

. . . *to continue to Horizontal Size,* turn the Rotary knob until Horizontal Size is highlighted. Next, follow steps 3 - 5 under Horizontal Size (on the next page).

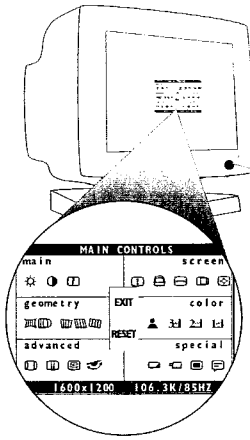
. . . *to exit completely,* press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

Screen Size & Position window

Horizontal Size

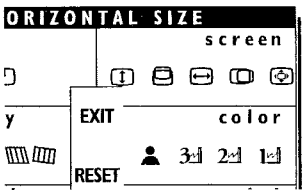
Horizontal Size expands or contracts the image on your screen, pushing it out toward the left and right sides or pulling it in toward the center.



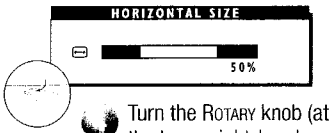
Press the On Screen Display button.

Turn the Rotary knob until the Screen Size & Position window is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until Horizontal Size is highlighted.

Press the On Screen Display button to return to Screen Size & Position.



Press the On Screen Display button to bring up Horizontal Size screen.



Turn the Rotary knob (at the lower right-hand corner of the monitor) until the image is the horizontal size you want.

Smart Help

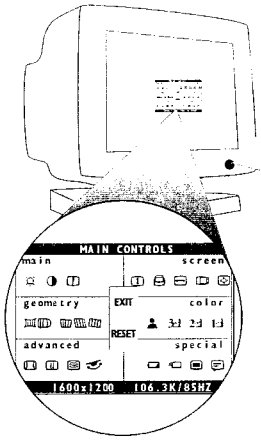
After returning to Screen Size & Position . . .

. . . to continue to Vertical Position, turn the Rotary knob until Vertical Position is highlighted. Next, follow steps 3 - 5 under Vertical Position.

. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

Vertical Position Vertical Size

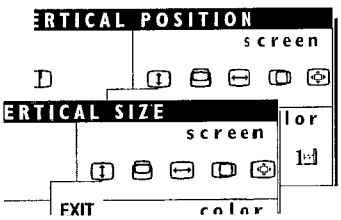
Vertical Position adjusts the image on your screen either up or down. Use this feature if your image does not appear centered Vertical Size expands or contracts the image on your screen, pushing it out toward the top and bottom sides or pulling it in toward the center.



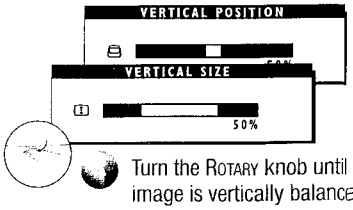
Press the On Screen Display button.

Turn the Rotary knob until the Screen Size & Position window is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until Vertical Position or Vertical Size is highlighted.

Press the On Screen Display button to return to Screen Size & Position.



Press the On Screen Display button to bring up Vertical Position or Vertical Size screen.



Turn the Rotary knob until the image is vertically balanced or the vertical size your want.

Smart Help

After returning to Screen Size & Position . . .

. . . to continue to Color Temperature, turn the Rotary knob until Exit is highlighted. Next, press the OSD button. Then follow steps 2-4 under Color Temperature window on the next page.

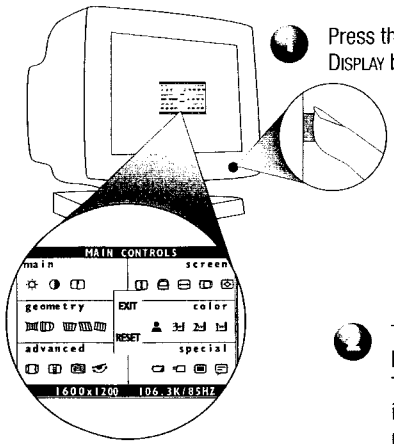
. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

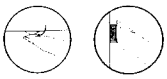
Color Temperature window

9300 K CAD/CAM / 6500 K DTP / 5500 K Photo Retouch

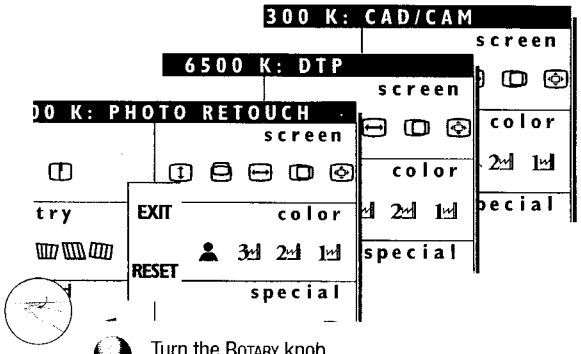
1 2 3 Your monitor has three preset options you can choose from. One 1 for Computer Aided Design (CAD) work. Two 2 for Desktop Publishing (DTP). And three 3 for Photo Retouch. When you select an option, the computer automatically adjusts itself for that selection.



Press the On Screen Display button.

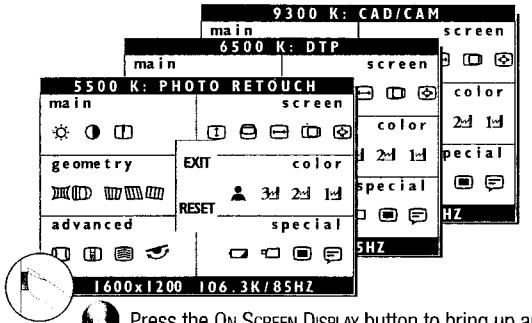


Turn the Rotary knob until the Color Temperature window is highlighted. Then press the On Screen Display button.



Turn the Rotary knob until CAD/CAM, DTP, or Photo Retouch is highlighted.

After each preset setting is saved, the on screen display automatically returns to the Color Temperature window. To save the next preset setting, simply repeat the steps listed here.



Press the On Screen Display button to bring up and save the preset settings for 9300 K CAD/CAM, 6500 K DTP, or 5500 K Photo Retouch.

Smart Help

After returning to Color Temperature . . .

. . . *to continue to User Presets,* turn the Rotary knob until User Presets is highlighted. Next, follow steps 3 - 9 under User Presets on the next page.

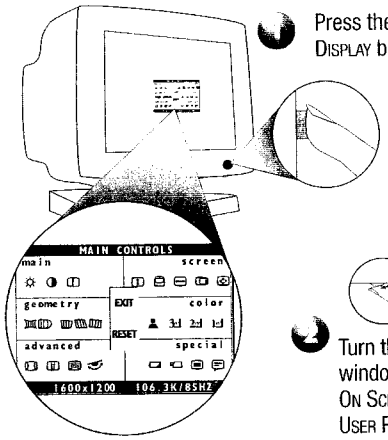
. . . *to exit completely,* press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

Color Temperature window

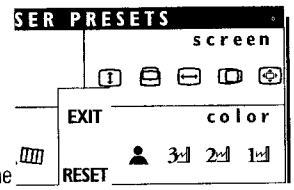
User Presets

If you need to adjust any of the three preset options (CAD/CAM, DTP, or Photo Retouch), follow the steps below to modify the colors that appear on your screen. You can make individual adjustments to each of the preset options.



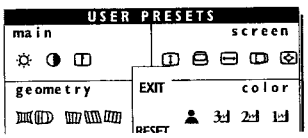
Press the On Screen Display button.

Turn the Rotary knob until the Color window is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until User Presets icon is highlighted.



Press the On Screen Display button to bring up the User Presets window.

You will now be back at the User Presets window. See Smart Help below for options.



If necessary, turn the Rotary knob until 1 of the User Presets is highlighted. Next, press the On Screen Display button.

To exit User Preset 1, press the On Screen Display button.

When done with green, press the On Screen Display button. Turn rotary to Blue, Blue will be highlighted.

To adjust the blue, press the On Screen Display button again. Then, turn the Rotary knob to increase or decrease the blue.

When done with red, press the On Screen Display button. Turn rotary to Green, Green will be highlighted. To adjust the green, press the On Screen Display button again. Then, turn the Rotary knob to increase or decrease the green.

First, press the On Screen Display button. Red will be highlighted. Next, to adjust the red, press the On Screen Display button again. Then, turn the Rotary knob to increase or decrease the red.

Smart Help

To exit User Presets (step 3 above), turn the Rotary knob until the Go Back icon is highlighted Go Back appears by the icon when highlighted. Next, press the On Screen Display button. You will be back at the Color Temperature window.

After returning to Color Temperature . . .

. . . to continue to User Preset 2 or 3, repeat steps 3 through 8, selecting either User Preset 2 or User Preset 3.

. . . to continue to Special Controls window, turn the Rotary knob until Exit is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until Special Controls is highlighted. Now, follow steps 2 - 5 under Special Controls on the next page.

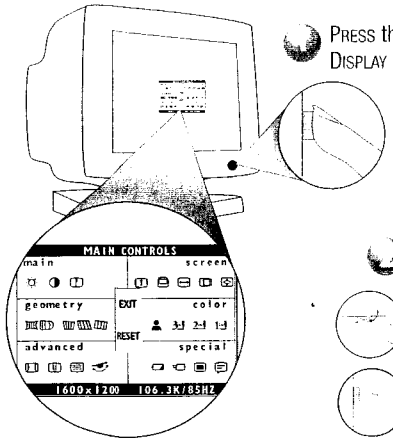
. . .to exit the On Screen Display completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

Special Controls window

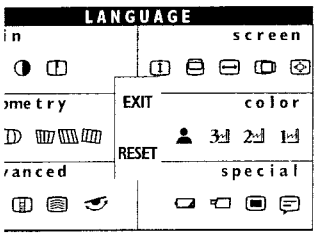
Language

The On Screen Display shows its settings in one of five languages. The default is English, but you can select French, Spanish, German, or Italian.



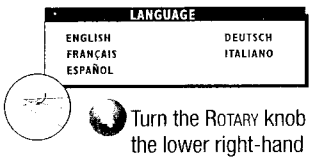
Press the On Screen Display button.

Turn the Rotary knob until Special Controls is highlighted. Then, press the On Screen Display button to highlight Language icon.



Press the On Screen Display button to confirm your selection and return to Special Controls.

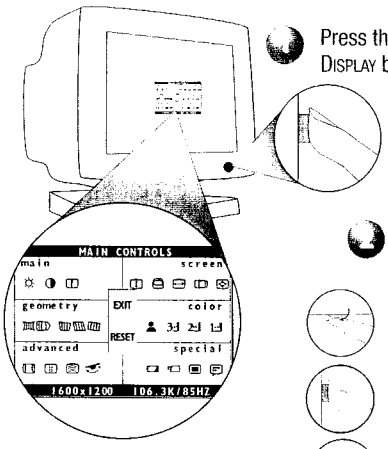
Press the On Screen Display button to bring up Language screen.



Turn the Rotary knob (at the lower right-hand corner of the monitor) until desired language is selected.

Power Saving

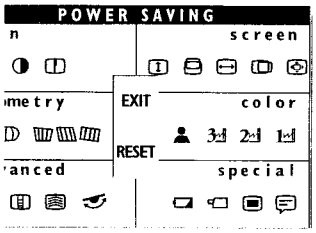
Power Saving helps save energy when the monitor is on but not being used. After a preset time, the monitor will go blank if not being used. To select Power Saving, follow the steps below.



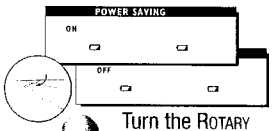
Press the On Screen Display button.

Turn the Rotary knob until Special Controls is highlighted. Next, press the On Screen Display button.Then, turn the Rotary knob until the Power Saving icon is highlighted.

Press the On Screen Display button to confirm your selection and return to Special Controls.



Press the On Screen Display button to bring up Power Saving screen.



Turn the Rotary knob to select Power Saving On or Off.

Smart Help

After returning to Special Controls . . .

. . . to continue to Power Saving, turn the Rotary knob until *Power Saving* icon is highlighted. Next, follow steps 3 - 6 under *Power Saving*

. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

Smart Help

After returning to Special Controls . . .

. . . to continue to OSD Controls, turn the Rotary knob until *OSD Controls* icon is highlighted. Next, follow steps 3 - 6 under *OSD Controls*

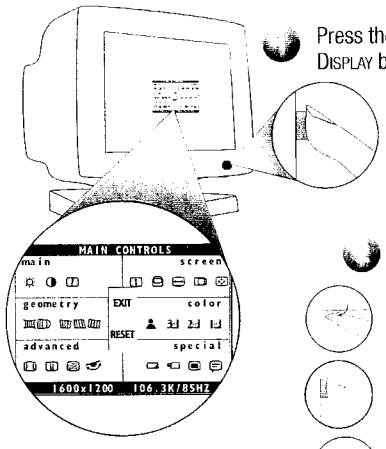
. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

Special Controls window

OSD Controls

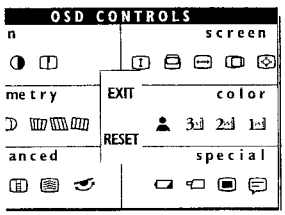
With OSD Controls, you can set the time for the On Screen Display to time out, and change the vertical and horizontal position of the OSD on the monitor screen.



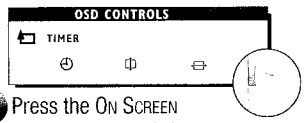
Press the On Screen Display button.

Turn the Rotary knob until Special Controls is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until the OSD Controls icon is highlighted.

Turn the Rotary knob to select either Vertical or Horizontal Position and repeat steps 3 - 6.

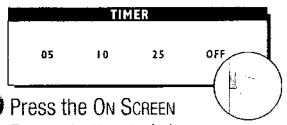


Press the On Screen Display button to add your change and return to OSD Controls.



Press the On Screen Display button to bring up OSD Controls screen.

Turn the Rotary knob to select 05, 10, 25 seconds, or OFF.



Press the On Screen Display button to bring up Timer screen.

Smart Help

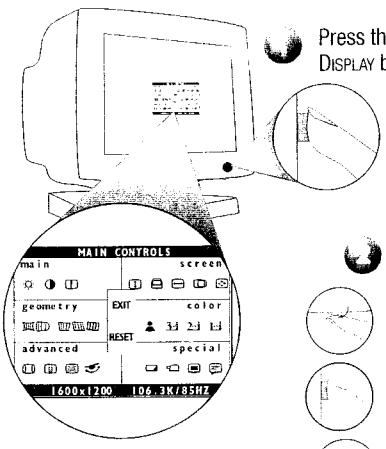
After returning to Special Controls . . .

. . . to continue to Video Input, turn the Rotary knob until Go Back is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until the *Video Input* icon is highlighted. Next, follow steps 3 - 6 under *Video Input.*

. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

Video Input

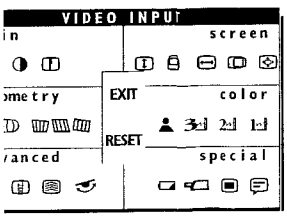
Video Input helps determine what you see on the screen. It is set at 0.7V(olts), but if the video input signal is different than the output signal, you may want to change it to 1.0V.



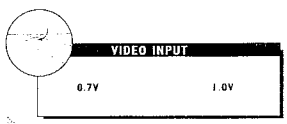
Press the On Screen Display button.

Turn the Rotary knob until Special Controls is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until the Video Input icon is highlighted.

Press the On Screen Display button to save your selection and return to Special Controls.



Press the On Screen Display button. The Video Input screen appears.



Turn the Rotary knob to select either 0.7V or 1.0V.

Smart Help

After returning to Special Controls . . .

. . . to continue to Advanced Controls, turn the Rotary knob until Exit is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob to *Advanced Controls* window and go to the next page.

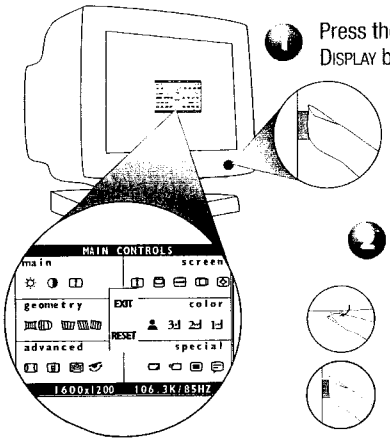
. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

Advanced Controls window

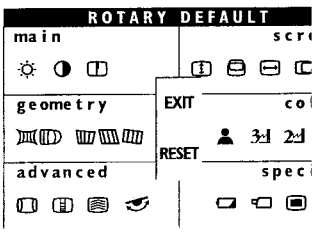
Rotary Default

Rotary Default allows you to pick the feature your Rotary knob will default to when not used in adjusting your On Screen Display. The normal default is brightness. To select your Rotary Default, follow the steps below.

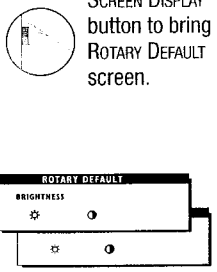


Press the On Screen Display button.

Turn the Rotary knob until Advanced Controls is highlighted. Then, press the On Screen Display button to highlight Rotary Default icon.



Press the On Screen Display button to add your adjustment and return to Advanced Controls.



Press the On Screen Display button to bring up Rotary Default screen.

Turn the Rotary knob to select Brightness, Contrast

Smart Help

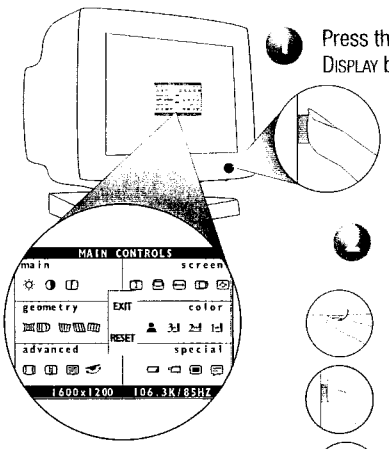
After returning to Advanced Controls . . .

. . . *to continue to Moire*, turn the Rotary knob until *Moire* is highlighted. Next, follow steps 3 - 5 under *Moire*.

. . . *to exit completely*, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

Moire

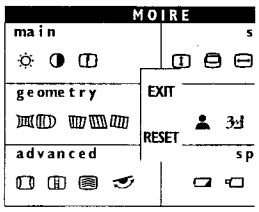
Moire is a fringe pattern arising from the interference between two superimposed line patterns. To adjust your Moire, follow the steps below. *Note: Use only if necessary. By activating Moire, sharpness can be affected.*



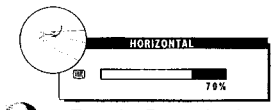
Press the On Screen Display button.

Turn the Rotary knob until Advanced Controls is highlighted. Next, press the On Screen Display button.Then, turn the Rotary knob until the Moire icon is highlighted.

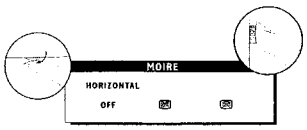
Press the On Screen Display button to add your adjustment and to bring up Advanced Controls screen. *See Smart Help to select Vertical Moire or turn Moire Off.*



Press the On Screen Display button to bring up Moire screen.



Turn the Rotary knob to adjust the moire.



Turn the Rotary knob until Horizontal Moire is highlighted. Then, press the On Screen Display button.

Smart Help

...to select Vertical Moire or to turn Moire off, follow the steps above, selecting Vertical Moire or moire off in step 4.

After returning to Advanced Controls . . .

. . . *to continue to Vertical Linearity*, turn the Rotary knob until Vertical Linearity icon is highlighted. Next, follow steps 4 - 5 under Vertical Linearity (on the next page).

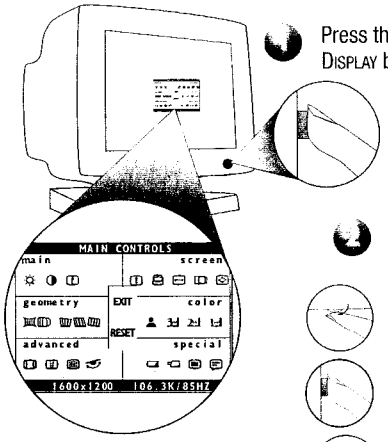
. . . *to exit completely*, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

Advanced Controls Window

Vertical Linearity

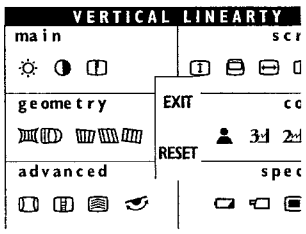
Linearity is the degree with which the actual location of a pixel on the screen corresponds with its intended location. To adjust your Vertical Linearity, follow the steps below.



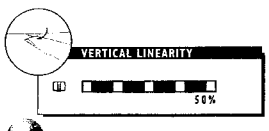
Press the On Screen Display button.

Turn the Rotary knob until Advanced Controls is highlighted. Next, press the On Screen Display button.Then, turn the Rotary knob until the Vertical Linearity icon is highlighted.

Press the On Screen Display button to add your adjustment and to bring up Advanced Controls screen.



Press the On Screen Display button to bring up Vertical Linearity screen.



Turn the Rotary knob to adjust the vertical linearity.

Smart Help

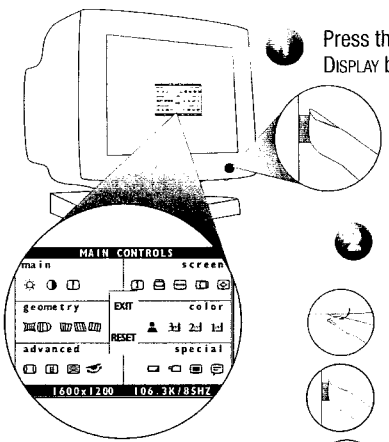
After returning to Advanced Controls . . .

. . . to continue to Corner Correction, turn the Rotary knob until Corner Correction icon is highlighted. Next, follow steps 3 - 4 under Corner Correction.

. . . to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

Corner Correction

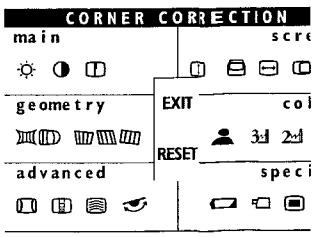
Corner Correction "squares up" the corners of an image on the screen To adjust your Corner Correction, follow the steps below.



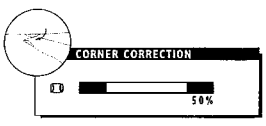
Press the On Screen Display button.

Turn the Rotary knob until Advanced Controls is highlighted. Next, press the On Screen Display button.Then, turn the Rotary knob until the Corner Correction icon is highlighted.

Press the On Screen Display button to bring up Advanced Controls screen.



Press the On Screen Display button to bring up Corner Correction screen.



Turn the Rotary knob until desired corner correction is selected.

Smart Help

After returning to Advanced Controls . . .

. . . to continue to Geometry window, turn the Rotary knob until Exit is highlighted. Next, press the OSD button. Then follow steps 2a - 2c under Geometry window on the next page.

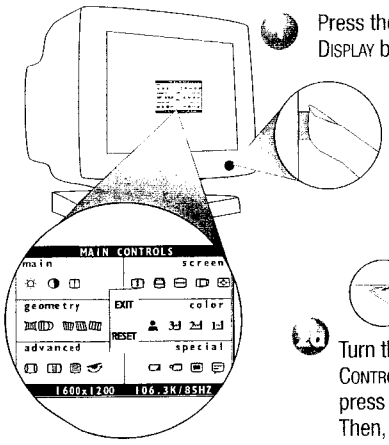
. . . to exit completely, press the OSD button and hold for 5 seconds. (See page 15 for other exit options.)

How to Use the On Screen Display (OSD)

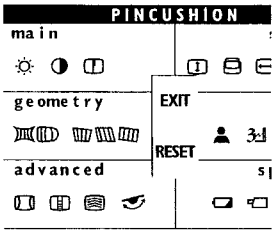
Geometry Controls window

Pincushion, Balanced Pincushion, Trapezoid, Parallelogram, Rotation

Follow the steps below to adjust any of the five preset options (Pincushion, Balanced Pincushion, Trapezoid, Parallelogram, or Rotation). You can make individual adjustments to each of the preset options. *Note: use these features only when the picture is not square.*



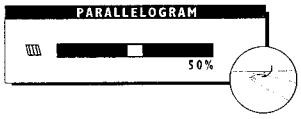
1. Press the On Screen Display button.

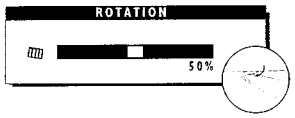


2. Turn the Rotary knob until the Geometry Controls window is highlighted. Next, press the On Screen Display button. Then, if necessary, turn the Rotary knob until Pincushion icon is highlighted.

3. Press the On Screen Display button. Then, turn the Rotary knob to adjust the pincushion.

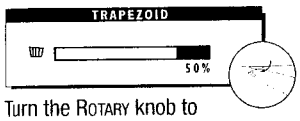
4. To select Parallelogram or Rotation, turn the Rotary knob until Parallelogram or Rotation icon is highlighted. Next, press the On Screen Display button. Then follow steps 4b and 4c to make the appropriate changes.





5. When done, press the On Screen Display button. This will save the change and return the screen to Geometry Controls window.

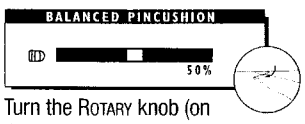
6. To select Balanced Pincushion, turn the Rotary knob until Balanced Pincushion is highlighted. Next, press the On Screen Display button.



7. Turn the Rotary knob to adjust the trapezoid.

8. To select Trapezoid, turn the Rotary knob until Trapezoid icon is highlighted. Next, press the On Screen Display button.

9. When done, press the On Screen Display button. This will save the change and return the screen to Geometry Controls.



10. Turn the Rotary knob (on the lower right-hand corner of the monitor) to adjust the balanced pincushion.

Smart Help

To exit Geometry Controls . . .

. . . but continue to another window, turn the Rotary knob until Exit is highlighted. Next, press the On Screen Display button. Then, turn the Rotary knob until that window is highlighted. Now, press the On Screen Display button and follow the instructions for that window.

. . . completely, press the On Screen Display button and hold for 1.5 seconds. The On Screen Display will disappear. All changes will be saved.

To make changes to one item, follow the steps for that item. Then, follow **"To exit Geometry Controls . . ."**

To return to factory presets, see "To Reset an Individual Window" on page 15.

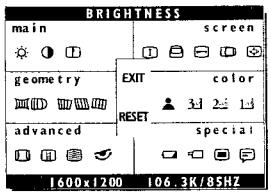
How to Use the On Screen Display (OSD)

Exit and Reset

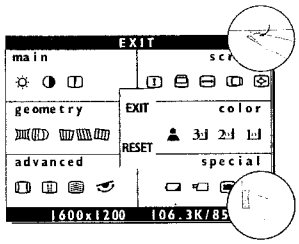
Exit & Reset from a Window

Choosing Exit allows you to go to another window. Choosing Reset returns all the settings in that window to factory presets.

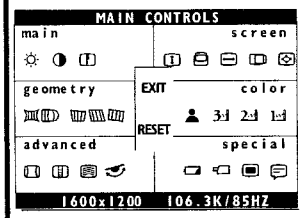
To Exit an individual window



Make sure you are at a window. For example, Main Controls. An icon will be highlighted. For example, Brightness.

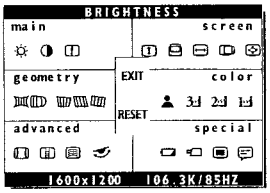


Turn the Rotary knob until Exit is highlighted. Next, press the On Screen Display button.

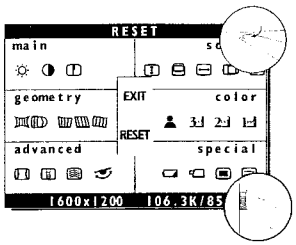


An entire window is now highlighted. Turn the Rotary knob to another window and begin adjustments, or turn the knob until Exit is highlighted as shown in Exit from OSD (at right).

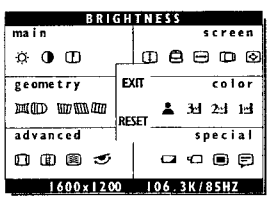
To Reset an individual window



Make sure you are at a window. For example, Main Controls. An icon will be highlighted. For example, Brightness.



Turn the Rotary knob until Reset is highlighted. Next, press the On Screen Display button.

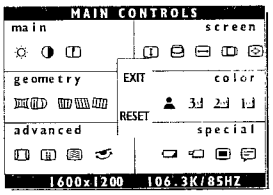


The first icon in the reset window is now highlighted. Turn the Rotary knob to select another icon and begin adjustments, or turn the knob until Exit is highlighted as shown above.

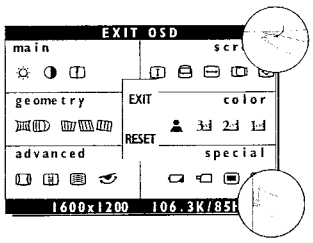
Exit & Reset from the On Screen Display

Exiting from the On Screen Display removes the On Screen Display from the monitor screen. Resetting from the On Screen Display returns everything in all the windows to factory presets.

To Exit an entire On Screen Display

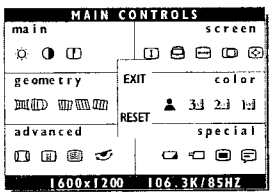


Make sure you have exited from all icons in a window. (See To Exit from an individual window.) For example, Main Controls will be highlighted.

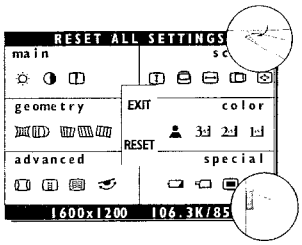


Turn the Rotary knob until Exit is highlighted. Next, press the On Screen Display button. The On Screen Display will disappear.

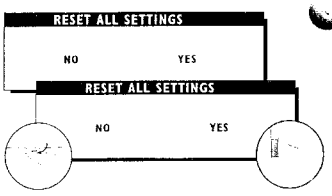
Reset Entire On Screen Display



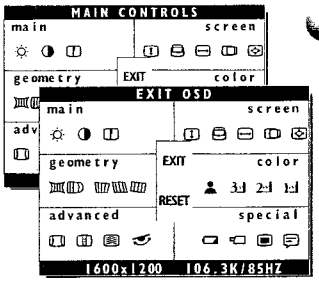
Make sure you have exited from all icons in a window. (See To Exit from an individual window.) For example, Main Controls will be highlighted.



Turn the Rotary knob until Reset is highlighted. Next, press the On Screen Display button.



Turn the Rotary knob to select No or Yes. Then press the On Screen Display button.



If No is selected the On Screen Display appears and Main Controls is highlighted.

If Yes is selected the Exit OSD screen appears.

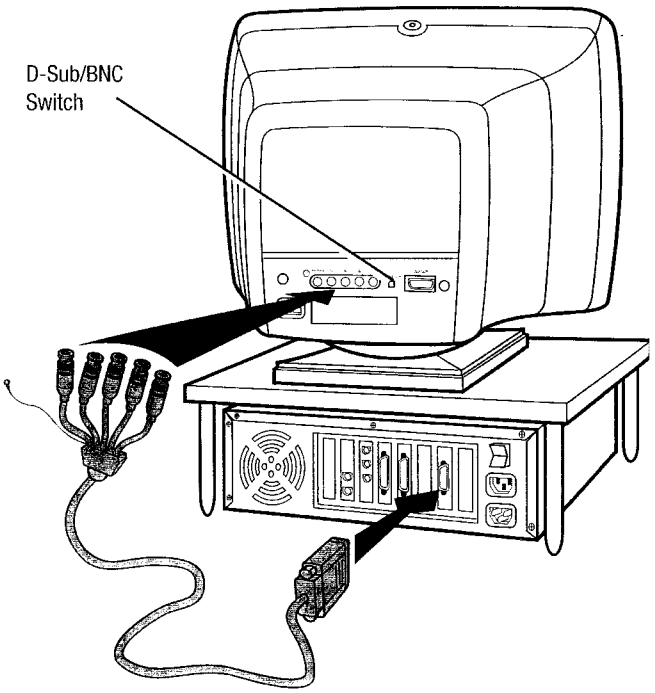
Additional Hook Up Options

BNC and USB Set Ups

BNC Connections

BNC is another way to connect the monitor to the computer. This connection requires an optional BNC cable. It can be connected to either a Macintosh- or IBM-compatible computer. For those who work with graphics or designs, this option may be better.

Note: Be sure to flip the D-Sub/BNC switch to BNC when using this connection.



For an IBM-compatible computer:

1. Turn off the computer.
2. Connect the (optional) BNC monitor cable and set D-Sub/BNC switch to BNC.
3. Connect the shielded power cable.
4. Turn on the monitor. Then turn on the computer.
5. If you have Windows '95, follow the "If you have Windows '95" steps on the Setting Up foldout sheet.

For a Macintosh-type computer:

1. Connect the Mac adapter to one end of the monitor cable.
2. Turn off the computer.
3. Connect the (optional) BNC monitor cable and set D-Sub/BNC switch to BNC.
4. Connect the shielded power cable.
5. Turn on the monitor. Then turn on the computer.

Refer to the "Setting Up your Philips monitor" foldout for a more detailed guide to setting up your monitor.

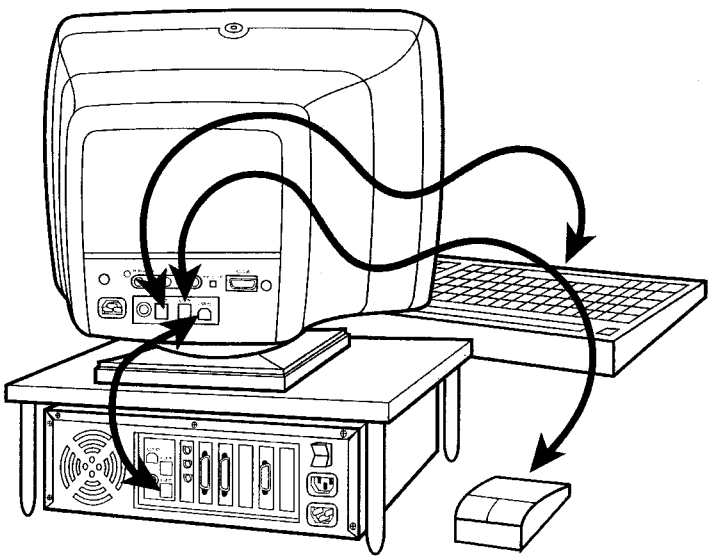
USB Connections

USB (Universal Serial Bus) is an innovation in connecting your IBM-compatible computer to your monitor. By using the USB, you will be able to connect your keyboard, mouse, printer, and other peripherals to your monitor instead of having to connect them to your computer. This will give you greater flexibility in setting up your system. Plus, you will have true plug-and-play capability. While the software is still being developed, Philips has included the hardware so you will be ready to take advantage of this next generation in computer development.

For an IBM-compatible Computer:

1. Turn off the computer.
2. Connect the (optional) USB Hub and cable to the computer and to the monitor. (Computer must have USB port.)
3. Connect the shielded power cable.
4. Turn on the monitor. Then turn on the computer.
5. With the installation of the correct software, you will be able to connect specially-made peripherals to the monitor.

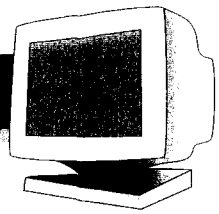
Note: USB Hub and cables sold separately. USB Bay exists in back of monitor.



Refer to the "Setting Up your Philips monitor" foldout for a more detailed guide to setting up your monitor.

ADDITIONAL INFORMATION

POWER SAVING FEATURE



AUTOMATIC POWER SAVINGS & PRESET RESOLUTION MODES

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce its power consumption when not in use. If input from a keyboard, mouse, or other device is detected, the monitor automatically "wakes up." The table directly below shows the power consumption and signalling of this automatic power-saving feature. To turn this feature on and off, see page 10. The tables at the bottom of the page show the 13/14 factory preset resolution modes. This leaves room for additions.

Power Management Definition

VESA's mode	Video	H-sync	V-sync	Power used	Power saving(%)	LED color
ON	Active	Yes	Yes	< 160W	0%	Green
Stand-by	Blanked	No	Yes	< 15W	87.5%	Yellow
Suspend	Blanked	Yes	No	< 15W	87.5%	Yellow
OFF	Blanked	No	No	< 5W	95.8%	Amber

This monitor is Energy Star compliant and power management compatible.

AS AN ENERGY STAR PARTNER, PHILIPS HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

The proper operation of the function requires a computer with VESA DPMS power management capabilities. When used with a computer equipped with VESA DPMS, the monitor is Energy Star compliant.

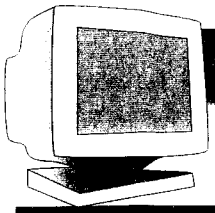
201B

Factory Preset Resolution Modes				
MODE	RESOLUTION	H. FREQ. (KHZ)	V. FREQ. (HZ)	STANDARD
1	640 x 400	31.5	70	VGA
2	640 x 480	31.5	60	VGA
3	640 x 480	37.5	75	VESA/75
4	800 x 600	46.9	75	VESA/75
5	800 x 600	53.7	85	VESA/85
6	1024 x 768	60	75	VESA/75
7	1024 x 768	68.7	85	VESA/85
8	1152 x 870	69.0	75	MAC
9	1152 x 900	71.8	76	SUN SPARC
10	1280 x 1024	80.0	75	VESA/75
11	1280 x 1024	91.1	85	VESA/85
12	1600 x 1200	106.3	85	VESA/85
13	1800 x 1350	105.5	75	

201P

Factory Preset Resolution Modes				
MODE	RESOLUTION	H. FREQ. (KHZ)	V. FREQ. (HZ)	STANDARD
1	640 x 400	31.5	70	VGA
2	640 x 480	31.5	60	VGA
3	640 x 480	37.5	75	VESA/75
4	800 x 600	46.9	75	VESA/75
5	800 x 600	53.7	85	VESA/85
6	1024 x 768	60	75	VESA/75
7	1024 x 768	68.7	85	VESA/85
8	1152 x 870	69.0	75	MAC
9	1152 x 900	71.8	76	SUN SPARC
10	1280 x 1024	80.0	75	VESA/75
11	1280 x 1024	91.1	85	VESA/85
12	1600 x 1200	106.3	85	VESA/85
13	1800 x 1350	105.5	75	
14	1600 x 1200	112.5	90	

Unit is capable of up to 1800 x 1440 with user definable modes. 201P/201B Monitors are compliant with VESA standard timing requirements.



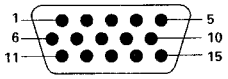
Additional Information

Coming to Terms with this Book

Pin Assignment

The 15-pin D-sub connector (male) of the signal cable:

Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Identical output - connected to pin 10
5	Self test
6	Red video ground
7	Green video ground
8	Blue video ground
9	No pin
10	Logic ground
11	Identical output - connected to pin 10
12	Serial data line (SDA)
13	H. Sync / H+V
14	V. Sync (VCLK for DDC)
15	Data clock line (SCL)



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Specifications

General

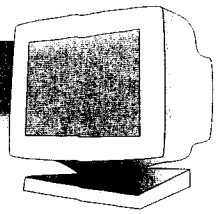
CRT

Screen size	:21" (53.3 cm) flat & square
Viewable Image Size (VIS)	:19.9"
Focusing method	:Dynamic focus
Dot pitch	:0.22 mm (horizontal)
Phosphor	:P22 or equivalent, medium short persistence
Screen treatment	:ARASC
Display area	
Factory preset	:380 mm (H) x 285 mm (V)
Maximum usable	:406 mm (H) x 304 mm (V)
Scanning frequency	
Horizontal (line)	:30-115kHz(201P) (AutoScan) 30-107kHz(201B) (AutoScan)
Vertical (frame)	:50-160 Hz (AutoScan)
Input power	:100-240 V AC, 50-60 Hz
Power consumption	:110 Watt normal, 160 Watt max.
Thermal dissipation	:(201B) 375.4 BTU normal, 511.9 BTU maximum : (201P) 375.4 BTU normal, 546.1 BTU maximum
Input signal	
Video	:0.7 or 1.0 Vpp, 75 Ohm impedance
Sync	:Separate sync. TTL level Composite sync. TTL level
Pedestal	
Tilt	:5° forward, 11° backward
Swivel	:90° left, 90° right
Physical	
Unit dimension (WxHxD)	:490 x 529 x 551 mm 19.3" x 21.7" x 20.8"
Net weight	:31.5 kg 69.3 lbs.
Operating conditions	
Temperature	:0° C - 40° C 32° F - 104° F
Humidity	:10% - 90%
Storage conditions	
Temperature	:-40° C - 60° C -20° F - -140° F
Humidity	:5% - 95%

Glossary

Here are a few definitions that may help you.

Degauss	The process by which metal parts of the monitor are demagnetized in order to reduce screen distortion and color impurity.
D-Sub/ BNC	Two ways of connecting your monitor to your computer. Your monitor comes with a D-Sub cable. For work with a heavy emphasis on graphics, a BNC cable is recommended.
Geometry	A set of controls that allows you to adjust the alignment of the picture on the monitor screen. The goal is to "square up" the picture. This is done by adjusting such items as balanced pincushion, pincushion, parallelogram, rotation, and trapezoid.
Moire	A fringe pattern caused by the interference between two superimposed line patterns.
USB	Universal Serial Bus. A way to connect your computer, monitor, and peripherals for true Plug-and-Play functions.



TROUBLESHOOTING

Having trouble? Something not working? Before calling for help, try these suggestions.

HAVING THIS PROBLEM?	CHECK THESE ITEMS
No Picture (Power LED not lit)	Make sure the Power cable is plugged in the wall and back of the monitor. Power button on top of the monitor should be in the ON position. Disconnect the monitor from the power outlet for about one minute.
No Picture (Power LED is Amber or Yellow in color)	Make sure the computer is turned on. Make sure the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 16. Make sure the monitor cable is properly connected to your computer. Check to see if the monitor cable has bent pins. The Energy Saving Feature may be activated. See pages 12 and 17 for more detail.
No Picture (Power LED is Green in color)	Make the Brightness and Contrast controls are set correctly. See page 4 for details Make sure the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 16. Make sure the monitor cable is properly connected to your computer. Check to see if the monitor cable has bent pins. Make sure the computer Power button is on.
Screen says when you turn on the monitor.	Make sure the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 16. Make sure the monitor cable is properly connected to your computer. See Setting Up foldout. Check to see if the monitor cable has bent pins. Make sure the computer is turned on
No Color	If you are using a non-VESA-DDC standard video card, consult your local Philips dealer or service organization to obtain an adapter.
Color appears blotchy	The picture may need degaussing. See page 5 for details. Remove any nearby magnetic objects. Face the monitor East for best picture quality.
Missing one or more colors	Check user settings of Color Temperature. See pages 8 and 9 for details. Make sure the monitor cable is properly connected to your computer. Check to see if the monitor cable has bent pins.
Dim Picture	Adjust the Brightness and Contrast controls. See page 4 for details. Check the Video Input selection and switch from 0.7 volts to 1.0 volts or 1.0 volts to 0.7 volts. See page 11. Check your video card and the manual instructions for it. It may be a non-VESA-DDC Standard card.
Picture is too large or too small	Adjust the Horizontal and/or Vertical Size. See pages 7 and 8 for details.
Edges of the picture are not square	The geometry controls require adjusting. See page 14 for details.
Picture has a double image	Eliminate the use of a video extension cable and/or video switch box. Face the monitor East for best picture quality.
Picture is not sharp	Check to make sure Moire is switched off. See page 12.
Unstable Picture	Increase your refresh rate. Consult your computer manual for details.
Windows '95 cannot find your video card	Select "Super VGA" under STANDARD DISPLAY TYPES, or contact your video card manufacturer for the right drivers.

TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an s by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol s on the schematic diagrams and /or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug). Defeating this safety feature may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock .

* Broken line — • — • — • — • —

Implosion

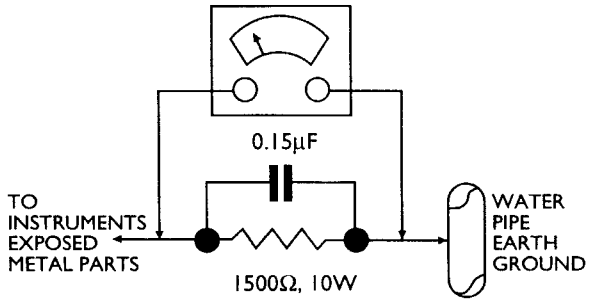
1. All picture tubes used In current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10W resistor paralleled by a 0.15uF. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/ volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note:An ac adapter is necessary when a polarized plug Is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

WARNING: Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE: The CRT DAG is not at chassis ground.